Gar Wood at the wheel of his speed cruiser Gar Jr. II

CONTENTS *for* JUNE, 1921

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THERE is so much of interest to everyone, boat owner as well as non-boat owner, in this issue of MoToR BoatinG, that it is rather hard to emphasize which articles are the most interesting and important.

Of course the trip of Gar Jr. II from Miami, Florida, to New York in less than 48 hours running time is the greatest motor boat achievement not only during the past month, but since the war. While this is a record which it will be hard to beat, yet we are sure that within a year a number of craft will try to better the time made by Gar Jr. II. and we do not doubt but that they will be successful.

The fact that the motors in Gar Jr. II. ran the total distance of 2,000 miles at better than 1,200 revolutions per minute all the time is a monument to the recent development of marine engines. There are a number of marine motors built today which we feel confident would have performed creditably for a similar distance. After all, 1,200 revolutions per minute is not fast today.

While we were in Buffalo en route to Detroit we visited the plant of the Sterling Engine Company and saw a six-cylinder 5¼ inch by 6¾ inch type G.R. Sterling motor running at 1,900 r.p.m. on the test block, pulling 285 horsepower, weighing 7 pounds per horsepower, with a gasoline economy which was almost beyond belief and as flexible in control as a steam plant.

On the day Gar Jr. II. arrived in New York from the South little Hippocampus, the 28-foot yawl, which is making the cruise to San Francisco, poked her nose out of New York harbor and headed for warmer regions. Almost immediately the wind went into the east and it has been there almost continuously ever since. Hippo may get some bad weather south of the Tropic of Cancer, but we are sure she'll get none worse than that met during the first few hundred miles out of New York. Mr. Loomis' article in this issue vividly describes his experiences. None should fail to read them. There will be more in subsequent issues, for Mr. Loomis is writing the stories exclusively for MoToR BoatinG.

There has been no abatement in the interest which our readers are showing in the Correspondence Course. The answers which have reached us on Lessons Nos. 1, 2 and 3 show that those enrolled have an excellent knowledge of the subjects and are grasping the points we tried to emphasize. A letter from one of the examiners, Commander Theodore I. Coe, of New Rochelle, N. Y., expresses the same sentiment as many of the examiners have. The Commander's letter follows:

"In my opinion all of the papers (Lesson No. 2) are entitled to a rating of not less than 80%.

"The average of the correct answers compares favorably with the high percentage of the answers to Lesson No. 1 and the usefulness and value of the Course is further demonstrated.

"There is but one missing link in the scheme and I realize the difficulty of overcoming this, which refers to the fact that a pupil is not advised of his incorrect answers, some of which apply to matters of vital interest in the handling of his boat.

"I am wondering if it would be possible to select the particular questions which are frequently misunderstood or incorrectly answered and include same in a supplementary chapter of instructions at the end of the regular course?"

We are planning to take care of the objection which Commander Coe makes. In an early issue of MoToR BoatinG we will begin publishing the answers to the various questions and commenting upon them as well as bringing out some of the common errors which a few of our students have made.

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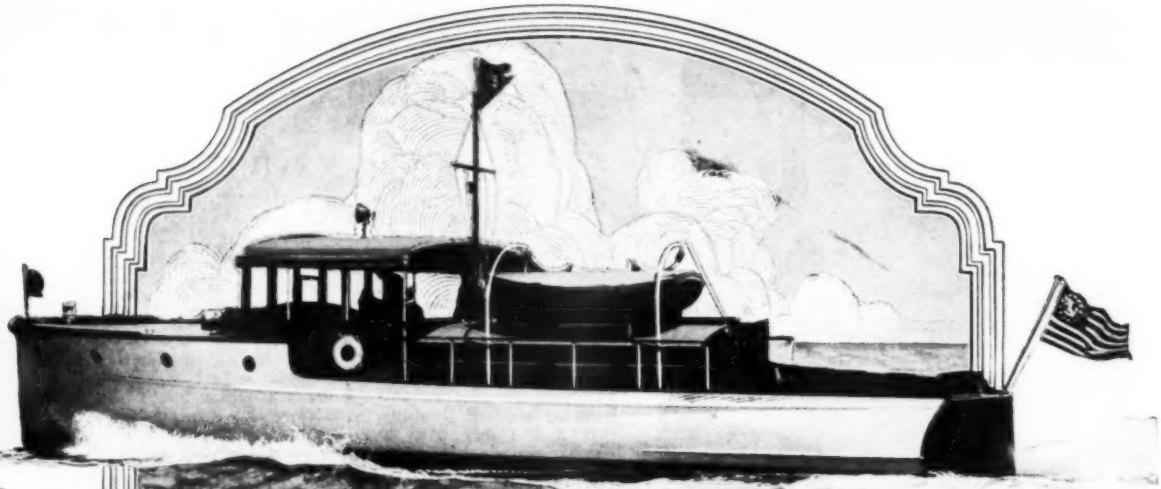

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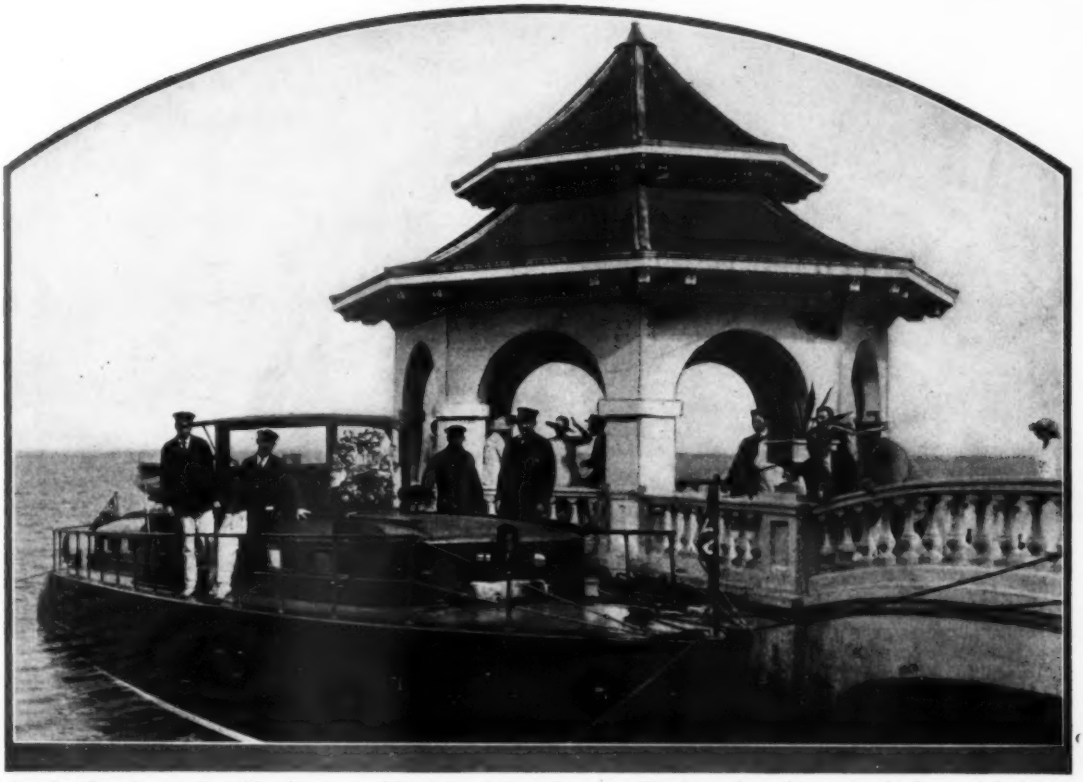


Gar Jr. II at Commodore Wood's pier at Miami just before the start. The horseshoe of roses on the forward deck was presented by Geo. Dewey and the boys of the Aero limited

Twelve Hundred Miles at Sea in a Speed Cruiser

The Remarkable Run of Gar Jr. II From Florida to New York Which Breaks All Records as Well and Beats the Running Time of a Train—Trip Continued to Albany, Buffalo, and Detroit, a Total Distance of 2,000 Miles Without Engine Trouble

By Charles F. Chapman

Photographs by Gar Wood, Rosenfeld and the writer

The run of Gar Jr. II from Miami to New York and on to Buffalo and Detroit is without doubt the most remarkable feat ever attempted or accomplished by a motor cruiser. Gar Wood has shown the world most of the remarkable developments in motor boats and marine engines which have happened during the past several years but this run of 2,000 miles without engine trouble of any kind surpasses all his other achievements.

No boating event in the past ever received the country-wide publicity which the press gave to this one. Newspapers in practically every city in the country carried news items on the days Gar Jr. II was making her history making voyage.

To sum up, one can not fail to see but that we have before us a new era in the development of fast, sea worthy, sea going motor boats, that the old theory of fast turning marine motors being not only inefficient but useless is exploded, that in the development of such boats and motors the surface is yet hardly scratched, that those people who want the type of craft which assures them that they will get to their destination safely, quickly and without the annoyance of engine trouble can be confident that the proper type of boat is obtainable.—EDITOR.

COMMODORE GAR WOOD of the Detroit Yacht Club up to a few weeks ago was the holder of every motor boat championship in existence except one. That championship to which his name was not attached never had any official title for the very good reason that Commodore Wood was the only living person who believed it possible to drive practically continuously, a 40-mile an hour speed cruiser twelve hundred odd miles at sea from Florida to New York, and then by the inland route another 800 miles to his home city of Detroit and still have enough of either boat or power plant left to be anything but a disgrace to the builders of boats and engines. Consequently no such test had ever been attempted.

But Gar Wood believed that such a performance or trip was not only possible but what is better, that it was practical also. He, as is well known, has believed for some time in the type of boat that can get up and go, not only on inland waters, but at sea in the average weather in which any type of cruiser would care to navigate. He believes that the term "high speed engine" is obsolete, that under proper conditions the modern marine motor will run at sea at 1,300 to 1,400 revolutions per minute just as long as the owner cares to feed gasoline and oil to it. He believes that it

Gar Jr.'s crew, Joe Kinney, mechanician; Capt. John Post, anchor expert; C. F. Chapman and Commodore Gar Wood

is no longer necessary to have heavy, cumbersome, deep draft vessels capable of speeds of 10 or 12 miles an hour to go to sea in with safety. Furthermore he argues that when considering comfort at sea the old accepted forms of boats would be relegated to the scrap heap and entirely replaced by a hull of a completely different design driven by high speed modern marine gasoline motors. The Commodore's ideas on a boat's construction and the equipment which it should carry also differ from those which have been believed in ever since ships went to sea and for some unknown reason no one has seen fit to improve upon in hundreds of years. In all of these features and many more, too, Commodore Wood has demonstrated and has shown to the world that they are correct and sensible.

Capt. Post makes ready to cast the watch charm anchor

The writer, as Editor of MoToR BoatinG and Secretary of the Racing Commission of the American Power-Boat Association, was asked by Commodore Wood to make the trip up the coast from Miami to New York and then on via the New York State Barge Canal to Buffalo and through Lake Erie to Detroit with him aboard his speed cruiser Gar Jr. II. The Commodore stated that the reason for extending the invitation was to make the records and times official.

Navigating on the high seas could not have been easier on an ocean liner except for the 30 mile breeze that was always blowing

The writer has had considerable experience in motor boat navigation and handling, but because he lived on the Atlantic seaboard where the type of craft is old-fashioned in the eyes of the Detroiter this experience was considerably discounted as he did not believe that 10 mile an hour navigation methods would be at all applicable when traveling 30, 35 or 40 miles an hour at sea.

The writer himself perhaps was none too confident either, so when the duties of keeping the log and that of provisioning the ship before the start were assigned to him he accepted them without comment although he had all the necessary navigation tools and equipment secretly stowed away ready to be brought forth if necessary. Perhaps the

Gar Jr. II. arriving at the Columbia Yacht Club, New York City, after the 1257 mile run made in 47 hours and 15 minutes

Gar at ease at sea in spite of the fact that the waves were high and the speed 30 knots at the time

lack of confidence in the Great Laker's navigation ability and that of the deep water slow speed salt was mutual, equal and opposite.

It should be mentioned at this time that nothing could have been more perfect than the way the boat was taken over her courses. For two full days fog was encountered, at times so thick that an object more than a few boat lengths ahead could not be seen. But not one mark or aid to navigation was missed. Each one was picked up dead ahead at the proper time without changing course or speed. One of the most inspiring things of the whole trip was this navigation in the fog, when running on courses of ten, twenty or to thirty miles in length to pick up marks with such clock-like regularity and precision gave one a feeling of confidence and security. It proved conclusively that a high-speed cruiser can be navigated at sea under the most unfavorable conditions safely and on a prearranged schedule. Not once did our navigation falter. Once after we had held a course for over 200 miles at sea some twenty to thirty miles off shore without sighting a thing, we checked our position by taking seven soundings at 15-minute intervals, and these gave us our exact location and data which permitted us to determine the time we should pick up land ahead in the fog. When we were within a few seconds of running out our time land showed up.

The run up from Miami to New York was planned primarily to demonstrate and prove that high-speed motors and a light-weight hull could and would stand up at sea for 40 or 50 hours of continuous service at full speed without any undue attention to motors or discomfort or danger to crew. Of course, it is to be understood that

Detroit Yacht Club burgee carried at the bow staff after one day out from Miami at New York not much more than shreds remained

At sea, a few hours out from Savannah, Ga. Notice the perfect wake formation

both hull and power plant must be properly designed and built for the particular service. It must not be taken for granted that any heterogeneous combination of hull and engines would do the trick. Aside from showing that hull, power plant and crew would come through unscratched we wished to make the trip in faster time than had ever been done before. We felt that if this could be done, in addition to establishing the status of the speed cruiser for such offshore work, that a great deal of friendly rivalry would be aroused and that many who go south every fall would have ambitions to build fast seagoing cruisers and make an effort to better our time.

It is a fact that up to the present time, because the cruisers which go south every winter are so slow, generally taking from two weeks to a month or even longer to make the trip, that their owners are in the habit of sending their craft south in charge of paid hands while they themselves go overland by rail. Therefore, it occurred to us that if we could approach or equal the train running time between Miami and New York in our trip up the Coast that the importance of the modern speed cruiser would be even further emphasized.

Of course, we could not expect to beat a train figuring the time from starting point to destination. That would be too great a task to even consider. In the first place, Gar Jr. II was only equipped to carry about 700 gallons of fuel, which at the best would make it necessary to stop for gasoline every 500 miles. This would mean long runs into harbors besides loss of considerable time in fueling. In addition to this it was not considered desirable to run at sea during the night. With a boat of this type and construction the danger of striking a floating object is the greatest menace of all and one which can not be overcome. Therefore, we decided to match our actual running time, deducting the time we were in port at night and fueling, with the train time.

The plan was this—I was to take a train from New York to Florida and return on Gar Jr. II. The scheduled running time of the train which took me South was 47 hours 44 minutes. As a matter of fact it took considerably longer than this, as the train was late

One of the lift bridges on the Albemarle Canal

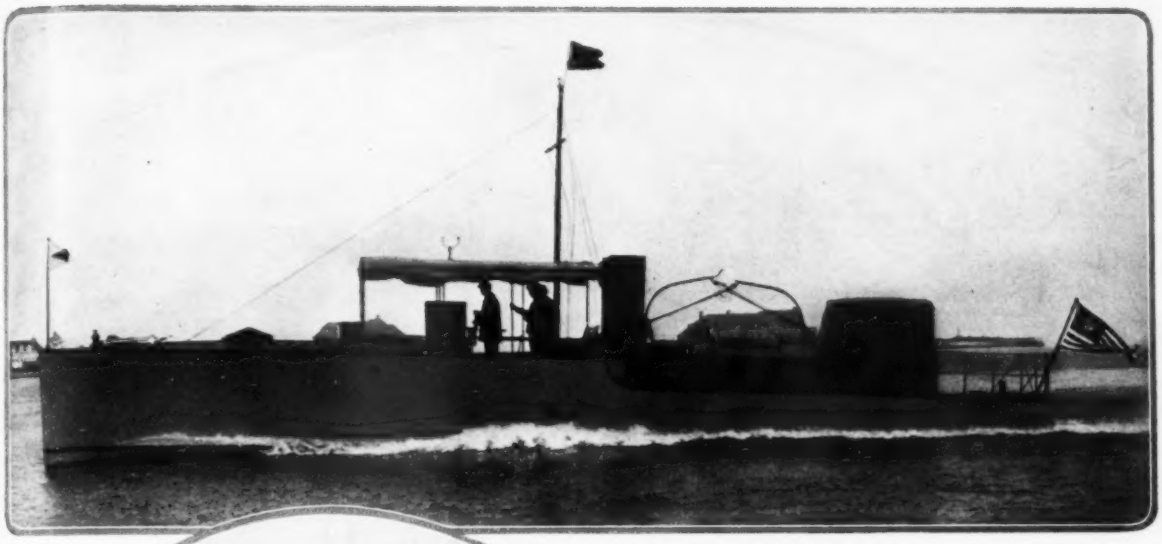
At sea, off Norfolk. As we worked north, the condensation of the exhaust became more and more marked

in reaching Miami. However, it was this time of 47 hours 44 minutes which we set as our mark to try to beat, considering only our actual running time from port to port.

When I reached Miami, two days before the scheduled time of start, I found everything in readiness for the trip with the exception of putting aboard the perishable provisions, ice, water, etc. This as a starter was considerably different from most cruises which two days before the start generally are in a most embryonic state. However, Gar Wood doesn't do things the ordinary way. If there is anything he believes in and insists upon, it is preparedness.

Of course, the chief concern was the power plant and auxiliaries. The motors, two Smith marine motors of 12 cylinders each, had been given a complete overhauling from spark plug to crankshaft. They had been taken down and gone over with the greatest

(*Continued on page 78*)



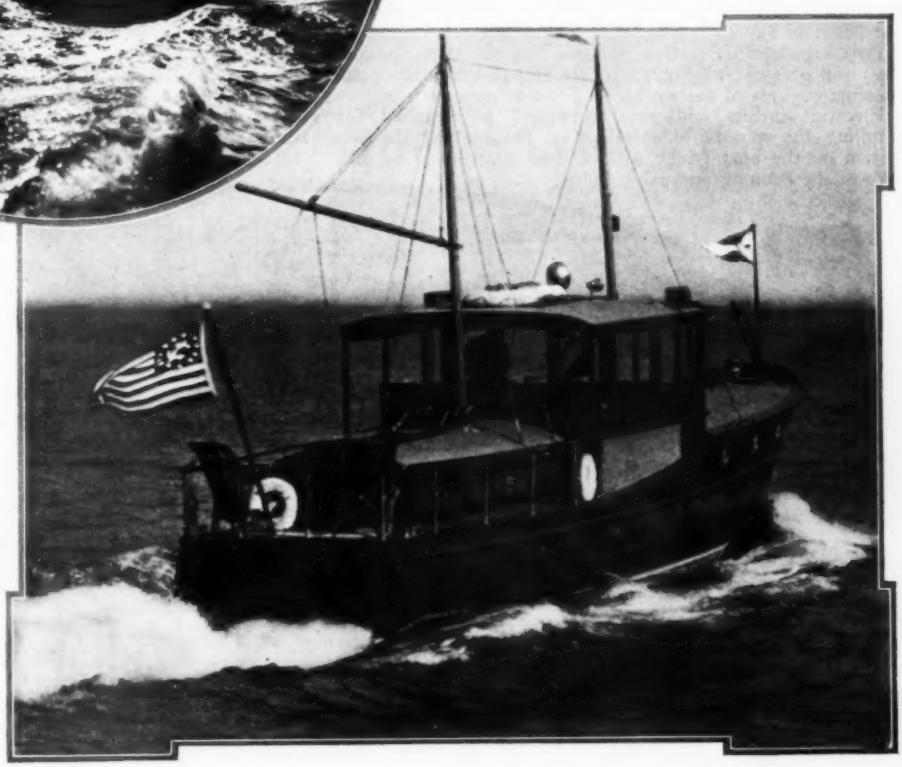
Elithro II was built by Luders Marine Construction Company for Captain James Laughlin 3d and will be remembered as having been one of the most successful naval auxiliaries during the war. She has recently been equipped with a pair of six-cylinder Van Blerck motors, fitted with the Van Blerck fuelizer. The little conning tower aft affords an effective shelter and enables the owner to use this compartment as an excellent little breakfast room during his ferry service to business

Cruising at Speed

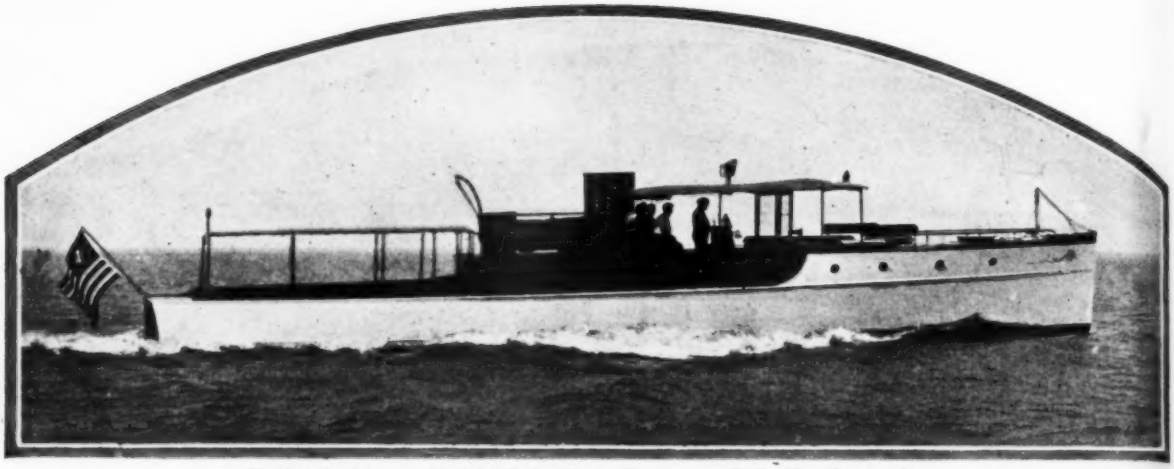
The Modern Tendency Demands the Speed of a Runabout With the Facilities of a Cruiser

Photographs by M. Rosenfeld

Naisha owned by Comm. Hugh Matheson of Cocoanut Grove, Florida is a Hand express cruiser also equipped with the Van Blerck fuelizer on a Model M-6 motor. This boat is ideal for fishing purposes having a speed range from 2½ to 25 m.p.h.



Charlotte E, as this boat is called, is 45 feet long and was built from designs by William H. Hand, Jr. She is equipped with a model MM-6 Van Blerck medium duty motor fitted with a fuelizer to permit easy maneuvering. One of the interesting features is the schooner rig provided to support a radio aerial



Equipped with new Model GR Sterlings, Harmony will do 28 miles per hour

Harmony and Iris II

Some Examples of the Season's Latest Styles in Motor Yachts, Both Equipped with New Model Power Plants

AMONG the most recent installations of dual-valve Sterlings in high-speed motor yachts is that of Harmony, which has just been re-equipped with a pair of these 300 h.p. motors. This cruiser, owned by S. H. Gillespie, of New York, is 66 feet long, 11 feet 5 inches beam, and was built by the Matthews Boat Co., of Port Clinton, O., a few years ago. New engines were decided upon last fall, and a pair of the eight-cylinder dual-valve Sterlings of 300 h.p. each were selected in order that greater speed could be realized from the boat.

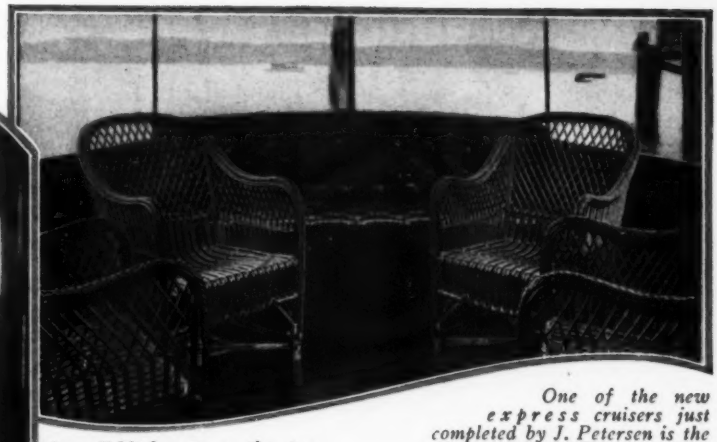
These motors are of the overhead valve type, and show a fuel efficiency approximately 27 per cent. better than the L or T head type of motors, due to the fact that the combustion chamber is perfectly cylindrical and is entirely machined. It has been stated that the internal friction of these motors has been reduced to a very low point and that a very high mean effective pressure has resulted. In fact the mean pressure averages with the most highly developed gasoline engines of the world.

Electric starters and generators will be supplied for handling the motors independent of the regular lighting system on the boat which will be used exclusively to take care of the running and cabin lights.

Early last year a new J. V. B. engine was installed in Iris II while she was down in Miami, Fla. Her owner, H. J. Jaeger, of Weehawken, N. J., used the boat steadily and brought it north under its own power and has covered upward of 4,500 miles thus far. Iris II is a heavily-constructed cruiser of 40 feet length and the medium-duty J. V. B. installed was thought by some to be entirely too light. The motor has lived up to expectations, however, and fulfilled every requirement.

The performance of this particular boat has been watched with keen interest. The reverse gear has also been under close observation. It will be remembered that the reverse gear used by the J. V. B. motor is a special type of sliding gear transmission, similar to that used by most automobiles. If you want to talk to a real live up-to-the-minute enthusiast, talk to H. J. Jaeger. He will discuss the wonderful points of the J. V. B. engine and its gear by the hour. Having had reverse gear troubles in his earlier experiences Mr. Jaeger feels qualified to discuss the freedom from troubles enjoyed by his new installation. He says that the engine is a dandy, full of power and as dependable as the Rock of Gibraltar, but the reverse gear is the biggest and best thing developed yet—it's a wonder.

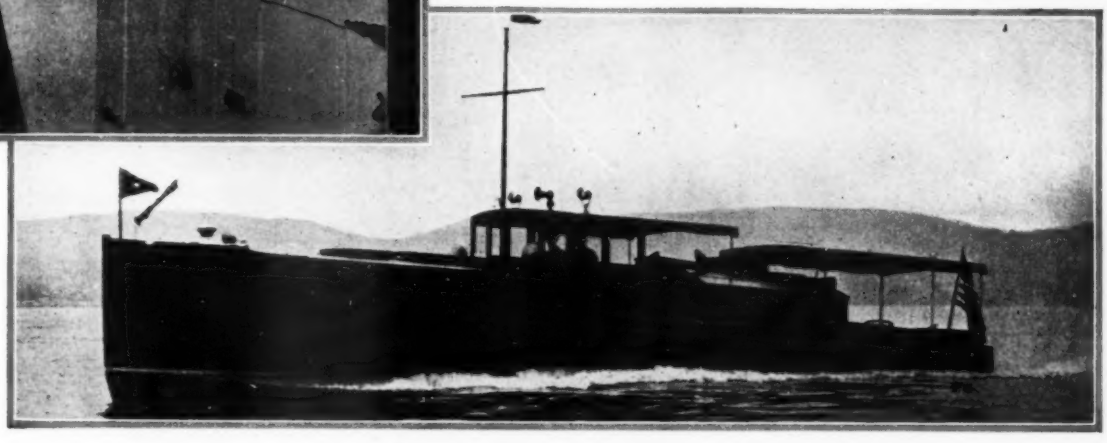
Iris II, the first cruiser equipped with a J. V. B. motor



A small kitchenette on the starboard side is equipped with a sink, icebox, two oil-burning stoves and other essentials

One of the new express cruisers just completed by J. Petersen is the 53-footer Ojai. The very comfortable cockpit aft can be completely enclosed to obtain protection from the weather

Photographs Edwin Levick



Ojai, a Smart Express Cruiser

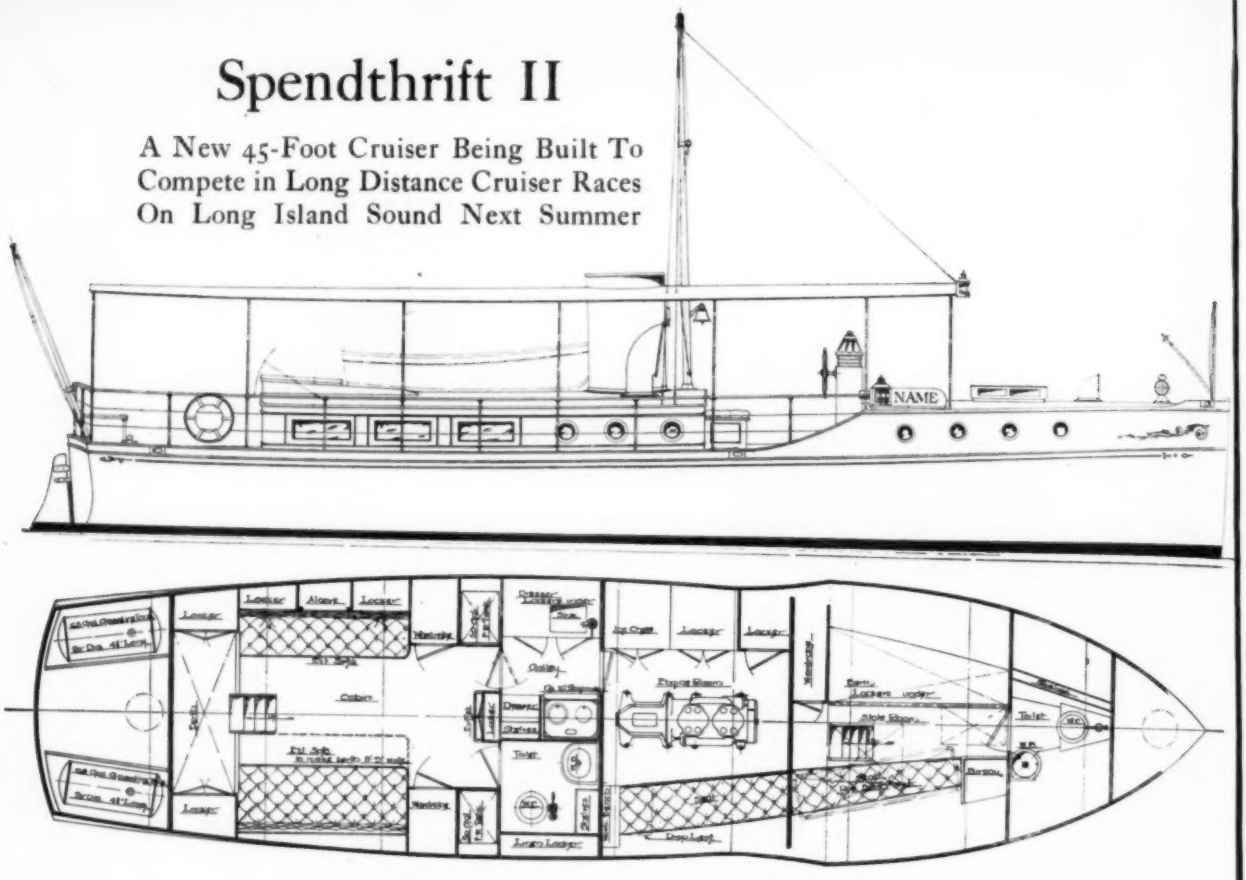
An Attractive Boat for LeRoy Frost, Travels With a Noticeable Absence of Fuss and Vibration

The bridge deck amidships is the nerve centre of the boat. It can be entered from the main saloon aft and is entirely closed in with Pullman-type windows

The engine room contains two six-cylinder, 125-h.p. Speedway motors, which give excellent service and drive the boat at 25 m.p.h. This speed exceeds the contract requirements by a comfortable margin

Spendthrift II

A New 45-Foot Cruiser Being Built To Compete in Long Distance Cruiser Races On Long Island Sound Next Summer

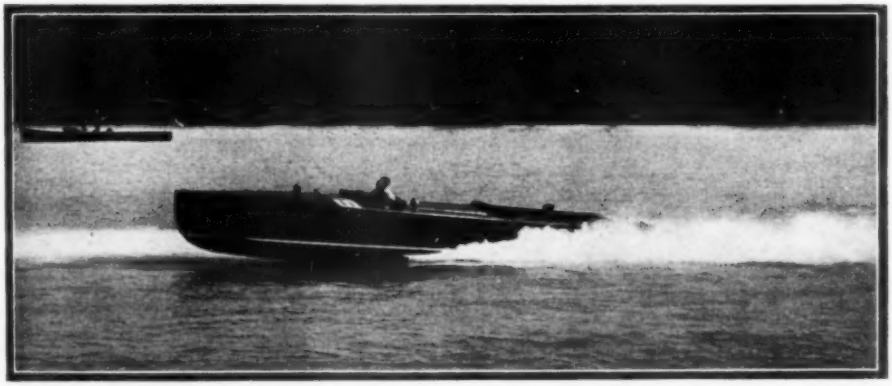


Profile and arrangement plan for Spendthrift II, a new 45-foot cruiser

WITH the determination to try and win one or two of the famous long distance races on Long Island Sound, such as the Block Island, and Handicap Cruiser Championship of America, W. R. Halsey of Mamaroneck, New York, is having a fine 45-foot cruiser built at the New York Yacht Launch and Engine Company's yard, Morris Heights, N. Y. This new boat was designed by Chas. Mower and if time and effort count for anything, she will be heard from in the results this summer. The power plant selected by Mr. Halsey is a four-cylinder Model MM4 Van Blerck of 65 h.p. and while the speed which it is expected to attain has not been mentioned it will be ample for all requirements with a little to spare. Ample accommodations are being installed so that the boat will fulfill its primary purpose of affording a means of recreation for Mr. Halsey and his family.

Doughboy, a Consistent Runabout

NO review of remarkable performances by runabouts could possibly be complete without the mention of the records of the well known Detroit Hacker-built runabout Doughboy which finished third in the Fisher Trophy races last summer. Taking the official A. P. B. A. time, and eliminating the first lap on account of the time having been taken from gun fire, it is interesting to note that Doughboy ran the remaining nineteen laps of 2½ miles each, with a variation of only five seconds. This despite the fact that there were four other boats in the race. The Hall-Scott six-cylinder 200 h.p. marine engine which powers Doughboy was installed early in 1920. Truly the record of Doughboy is an enviable one and it is worthy of note that her entire season's record is quite equal in every respect to her Fisher Trophy performance. She is well named, and her performance reflects great credit to the builders of the hull and engine who have made the successful combination possible. She will probably compete again in this year's race.

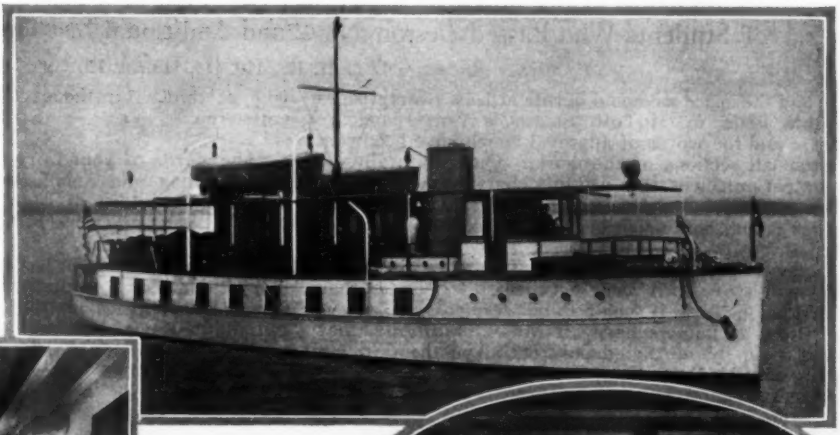


Doughboy, the Hall-Scott powered runabout, which made an enviable record throughout last season in the waters around Detroit

Luneta, an 85-Foot Houseboat

A Recent Development In Motor Driven Houseboats Many of Which are To Be Seen In Florida During the Winter

AMONG the latest developments in motor houseboats can be found such boats as Luneta, an 85-foot vessel with an 18-foot beam and a draft of only 3 feet. Luneta was built by the Mathis Yacht Building Company, Camden, N. J., for Col. S. L. H. Slocum, of Washington, D. C. She combines all the advantages of the large-size houseboats of the past,

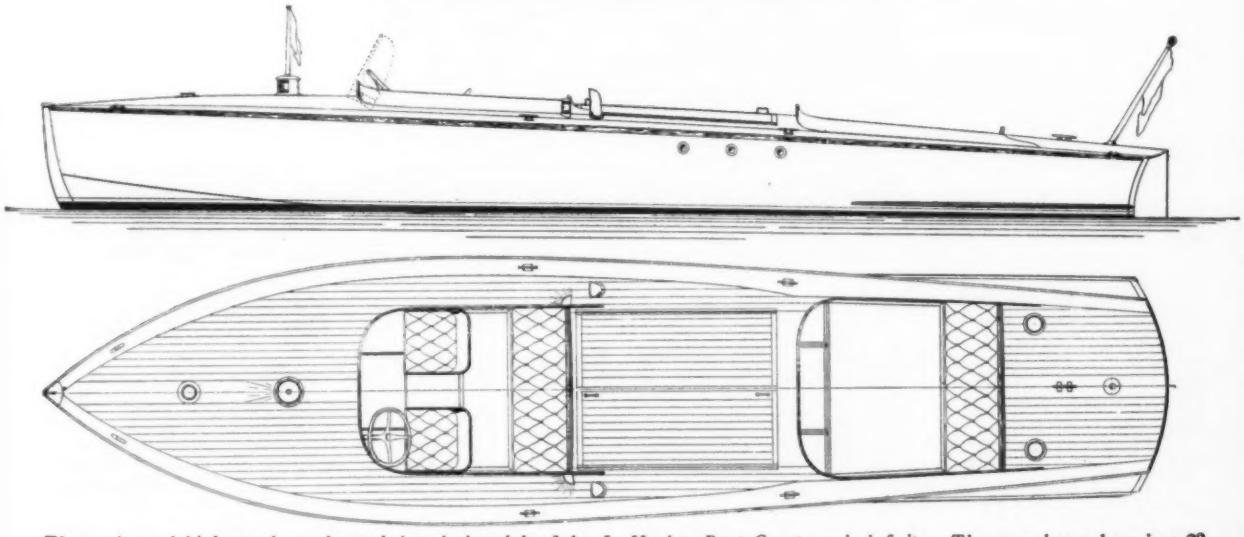


Photographs by Joseph Pearce, Phila., Pa.

The glistening white of the bathrooms and the mahogany trimmed staterooms compare favorably with the luxury of the finest hotels

retaining all the comfort and seaworthiness of the larger boats, combined with a distinct reduction in the cost of operation. On her way South she proved herself to be a wonderful sea boat in all kinds of weather; was the center of interest at Washington, and is now in Florida waters.

On deck she is equipped with enclosed steering stand, an extra large luxurious deckhouse with broad observation windows and a delightful after deck; while below decks she has four fine, comfortable double staterooms, and two completely equipped bathrooms and separate toilet.



The variety of high-speed runabouts being designed by John L. Hacker Boat Company is infinite. The one shown here is a 28-foot double cockpit runabout which will be supplied with a Hall-Scott motor installation. High speeds are the natural result of such a combination, and comfort for the passengers has not been overlooked

MoToR BoatinG's Correspondence Course Still Going Strong

Enrollments Continue to Be Received—Questions on Lesson No. 4—Names of Students Who Passed Lesson No. 2 and Additional List for Lesson No. 1

See also pages 17 *to* 21, 108, 110, 114, 118 *and* 120

IF we had the space we could devote at least twenty pages in this issue to MoToR BoatinG's Correspondence Course and the words of approval which have been sent to us from all sections of the world. Quite naturally we must content ourselves with printing short extracts from a very few of these. But these will demonstrate how popular the course is and how much benefit it is to be to all motor boatmen.

The answers to Lesson No. 2 which were received during the month of April were excellent, even better than those of Lesson No. 1, if such a thing were possible.

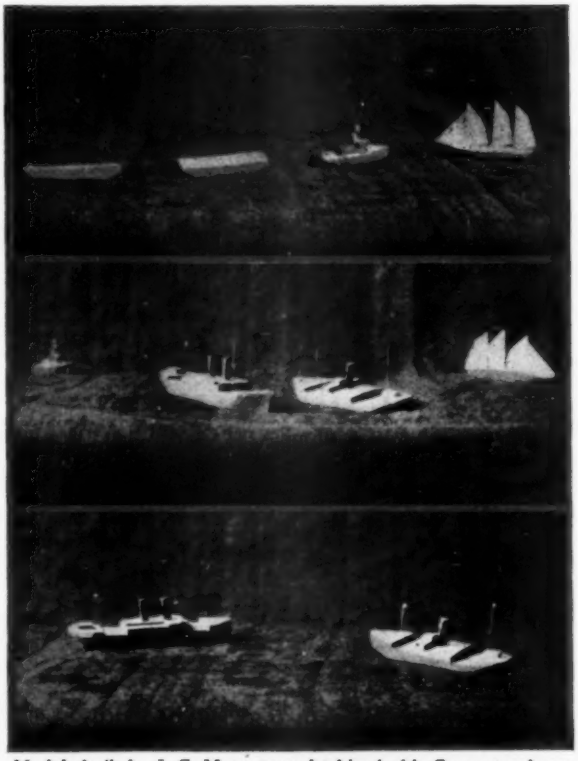
The fifteen examiners have all worked faithfully, they have had a big job on their hands, but all of them are cooperating with MoToR BoatinG most enthusiastically.

The names of those whose answers to Lesson No. 2 were received during April and who passed by at least 80% are published on page 110. The names of those who passed Lesson No. 1, but whose answers were not received in time to print in the May MoToR BoatinG are also printed on page 110.

In July MoToR BoatinG we will print the names of those whose answers to Lessons No. 1, No. 2, or No. 3 are received during the month of May. So you will see that it is not too late to send in answers to the first two lessons if you have not already done so.

Questions for Lesson No. 4 will be found on page 108. The answers should be addressed to the Editor of MoToR BoatinG, 119 West 40th Street, New York, N. Y. They may be sent any time, but we suggest that they be sent to us as early as possible.

If for any reason your name has not appeared and you believe it should, we suggest that you write to the Editor. The mails often miscarry and other errors occur which we are very anxious to correct. Therefore do not hesitate to advise us if we can be of any service.



Models built by J. C. Mann to assist him in his Correspondence Course studies. Upper view shows tow over 600 feet in length meeting a sailing vessel, center view: at left, tug boat towing submerged wreckage, center, two steamers, the one on the right being out of control and a sailing vessel. Lower view shows two boats in a crossing situation

To give our readers a little idea of how the Correspondence Course is being received we feel that they will be interested in reading portions of some of the letters, all of them unsolicited, we have received. Therefore we are printing some of these below:

"I have been reading, with more than ordinary interest, your navigation articles in MoToR BoatinG, and think they should be in the hands of every yachtsman. They are the best thing I have seen in this line for a long time, and are written in language so simple and to the point, and so well supplemented by illustrations, that even the uninitiated could not help but understand and find them interesting. I think the yachtsmen of the country owe you a vote of thinks for the excellent way in which these are gotten up." SHELDON CLARK, Chicago, Ill.

"The merits of your Correspondence Course in Seamanship, Piloting and Small Boat Handling are appreciated even from this distant island."

ALFRED F. ALEXANDER, Havana, Cuba.

"Being an amateur in boating circles, I have been on the lookout for such information as given in your Correspondence Course for a long time. I am glad to state that this course hits the subject right on the head."

H. R. BROLL, Baltimore, Md.

"You are to be congratulated for offering this really practical course which should prove of great value to motor boat enthusiasts."

A. H. FRASER,
Vancouver, B. C., Can..

"I believe that you have succeeded in stirring up a degree of interest in motor boat lovers, that otherwise would not have been approached, and you are to be highly commended for your enterprise."

EDWIN D. KENYON,
Brooklyn, N. Y.

"I think your Correspondence Course the greatest thing out and I feel sure it will do much to better and make safe the greatest sport there is—barring none."

C. T. MAGEE,
Seattle, Wash.

"I know that your course is going to be very helpful to all us 'bugs' on boating, and will be received with 'open arms' by all your enthusiastic readers."

HERBERT JAMES HODGDON,
New Bedford, Mass.

"I have all kinds of books on navigation and seamanship which are good and a great deal of benefit can be gotten from them. But I want to say that for the layman you have surely hit the key-note with this course. He or she who studies with you and doesn't learn a great deal about boating, even though an Old Salt is beyond my imagination."

A. L. WARREN, Minneapolis, Minn.

"It is going to mean a great deal of labor for a committee to pass upon these reports, especially where questions and answers are written out. There are undoubtedly a great many others in the same position as myself. I own a boat, but know nothing about the technical terms; therefore, I believe that your course will appeal to every boat owner." O. H. SHERBROOK, Boston, Mass.

(*Continued on page* 108)

Equipment Required by Law, and Government Publications

The Legal Requirements for All Classes of Boats—Many Official Booklets Designed to Simplify the Work of the Motor Boatman

MOTOR BOATING'S CORRESPONDENCE COURSE IN PILOTING, SEAMANSHIPP AND SMALL BOAT HANDLING—LESSON NO. 5

See also pages 17 *to* 21, 108, 110, 114, 118 *and* 120

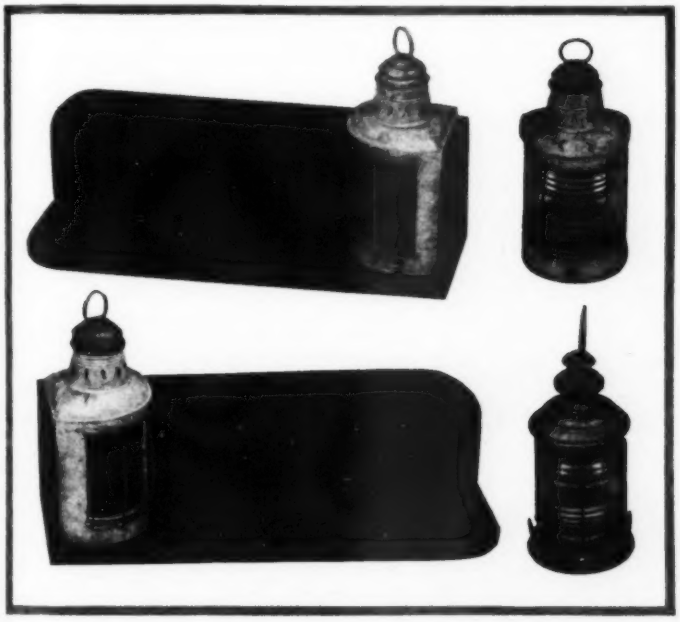


Fig. No. 119—*The Pilot Rules require distinct sailing lights for all classes of boats. Those required for Classes* 2 *and* 3 *are identical in general characteristics differing only in size. A white bow light showing through* 20 *points. Red and green, port and starboard lights showing through* 10 *points each and a white light at stern showing all around the horizon. Side lights must be screened and all lenses of the fresnel type*

Area of Lenses	Class 2 sq.in.	Class 3 sq.in.
Bow light	19	31
Side lights	16	25
Length Screens	in. 18	in. 24

Fig. No. 120 — *Class* 1 *boats should carry a combination port and starboard light showing through ten points on either bow, and a white light aft showing all around the horizon. Boats of this class carrying separate side lights should also carry a white bow light. It is advisable that boats of this class comply strictly with the requirements and carry the combination light*

Photographs by M. Rosenfeld
Equipment—Courtesy of C. D. Durkee and R. W. Zundel

Fig. No. 121—*Motor boats not carrying passengers for hire must have life preservers or life belts or buoyant cushions or ring buoys or other approved device sufficient to sustain afloat every person on board including crew, children and babies. Motor boats carrying passengers for hire shall carry one life preserver of the prescribed type for every passenger carried and the person in charge must be licensed*

Figure 122

THE fifth lesson in MoToR BoatinG's Correspondence Course in Piloting, Seamanship and small boat handling this month discusses the equipment required to be carried on all classes of motor boats and also the aids to navigation in the form of government publications which simplify the work of the amateur sailor. Motor boats are divided generally into three classes for purposes of regulation. Class 1 comprises all boats under 26 feet in length. Class 2 takes in all boats from 26 to 40 feet in length. Class 3 is the largest class and takes care of everything between 40 and 65 feet in length.

Lights for motor boats are an essential item in the equipment. Class 1 must carry at all times between sunset and sunrise a combination red and green lantern which is so arranged as to show a red light on the port side and a green light on the starboard side, and also a white lantern at the stern which shows all around the horizon. It is optional to use separate side lights but in this event a separate white bow light should also be carried. It is preferred however that Class 1 boats adhere strictly to the regulations and use the combination lantern. A whistle capable of producing a blast prolonged for at least two seconds should also be provided.

Class 2 motor boats are required to carry a white bow light showing through 20 points from dead ahead to 2 points abaft the beam on either side. The area of the lens being at least 19 square inches. A red light on the port side and a green light on the starboard side to show through ten points of the compass. The area of the lenses being at least 16 square inches. A screen should be provided at least 18 inches long to prevent these lights from showing across the bow. A white light at the stern arranged to show all around the horizon is also necessary. A whistle answering to the same requirements as Class 1 must also be carried as well as a fog horn and a bell.

Class 3 motor boats are required to carry a white bow light showing through 20 points from dead ahead to 2 points abaft the beam on either side. The area of the lens for this light will be at least 31 square inches. A red

Fig. 122—All motor boats coming within the provisions of the Pilot Rules, which includes every vessel propelled by machinery and not more than sixty-five feet in length, except tugboats propelled by steam, are required to be provided with an efficient whistle, or other sound-producing mechanical appliance, fog horn and bell. Class 1 excepted as far as the bell and fog horn is concerned. No size or style of whistle, fog horn or bell is prescribed except that the bell for Class 3 must be not less than eight inches across the mouth. The whistle must be capable of a prolonged blast and two seconds shall be deemed sufficient within the meaning of the law. A mouth whistle capable of producing such a blast has been held to comply with the law. All motor boats subject to the law are required to carry ready for immediate use, the means for effectually extinguishing burning gasoline. No specific means is prescribed, most of the commercial extinguishers have been approved and in addition salt or sand, preferably the two mixed, may be kept in a pail ready for use and marked "USE ONLY IN CASE OF FIRE."

The fog horn must be carried but does not take the place of the whistle on boats of class 2 and 3.

light on the port side and a green light on the starboard side to show through 10 points of the compass with an area of lenses at least 25 square inches. A screen is also necessary which shall be at least 24 square inches long to prevent the lights from showing across the bow. A white light at the stern showing all around the horizon is also required. A whistle capable of producing a blast of at least two seconds duration and audible for a half a mile must be provided together with a fog horn and a bell which must be at least 8 inches across the mouth.

It is required on all classes of motor boats that one life preserver, life belt, buoyant cushion, ring buoy or similar device be carried for every person on board including children and babies and so placed as to be readily accessible. On motor boats which are operated for hire it is required that these life preservers be of an approved type. The test which all devices of this kind must pass is that they sustain afloat for twenty-four hours a weight which exerts a direct downward pull of 20 pounds. Pneumatic devices or appliances filled with granulated cork are not acceptable. Wooden floats of white pine or similar light wood and measuring four feet by fourteen inches by two inches thick may be used.

A fire extinguisher of an approved type capable of extinguishing burning gasoline must be carried. This may be supplemented by salt and sand (preferably the two mixed) kept in a pail ready for immediate use.

When at anchor, boats of all classes must show a white light less than 20 feet above the hull and visible around the horizon for at least one mile.

Another requirement is that two copies of the Pilot Rules must be carried on board the boat at all times.

Fog horns must be carried but cannot take the place of whistles on motor boats of classes 2 and 3.

Motor boats which carry passengers for hire must be in charge of a duly licensed operator.

On motor boats more than 40 feet in length and not more than 65 feet in length propelled by machinery driven by steam, the design of the engine, boiler or other operating machinery shall be approved by the local inspectors. All steam vessels more than 65 feet in length are subject to inspection.

Motor boats propelled otherwise than by steam and above 15 gross tons

(Continued on page 118)

Fig. 123—While the law does not specifically call for any type of whistle or sound-producing device, it does require that it be capable of producing a blast of two seconds duration which can be heard for at least one-half a mile. There are numerous air-warning signals and whistles of electrical type which will comply with this provision. For your own protection it is best to carry a signal which can be heard farther than the required half mile.

The law does not mention mufflers. There are, however, local police ordinances in many places which require these and for your own comfort it is advisable to provide a muffler on the exhaust line in order to reduce the sharp bark of the motor

Figure 123

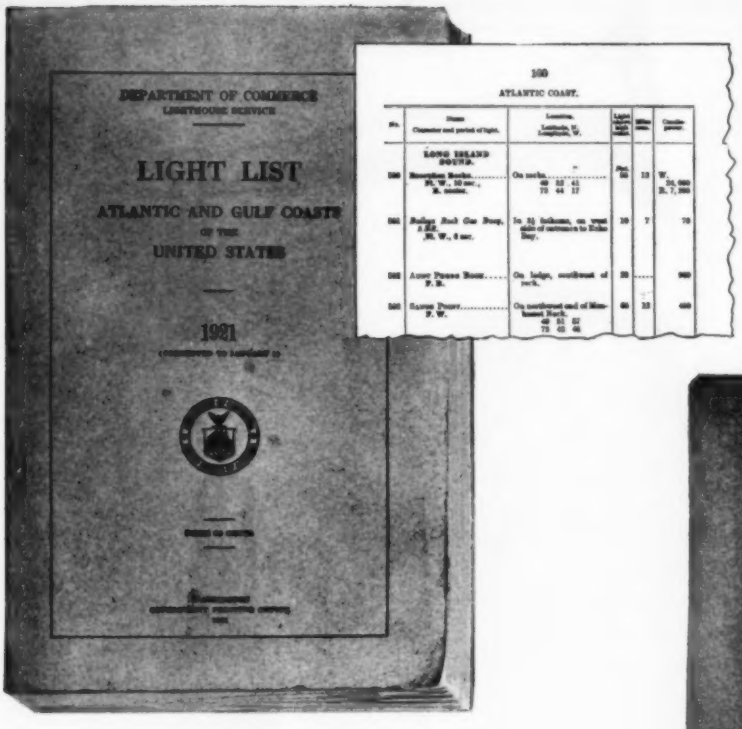


Fig. No. 124—The Light List published by the Department of Commerce supplies complete information concerning the characteristics and nature of every lighted aid to navigation within its boundaries. It can be corrected weekly by use of Notices to Mariners. The reproduction of the page shown gives the number of the light, its character and period together with its location with latitude and longitude. The height above the water is given as well as the visible range and candlepower of the light. The nature of the type used indicates the relative importance of the light. The primary seacoast lights are printed in bold capitals. Secondary lights in bold capitals and lower case letters. River, harbor and other lights in large and small capitals. Light vessels are printed in bold, capital italics, while other floating lights appear in italics

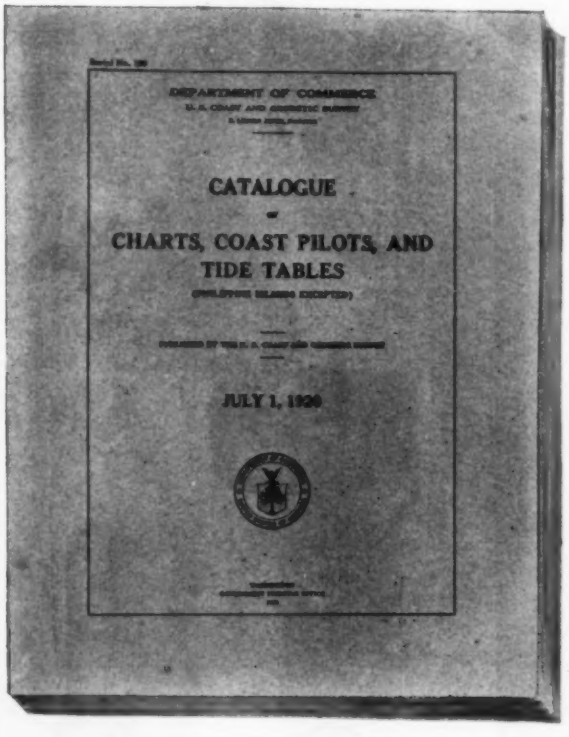


Fig. No. 125—The catalog of charts, coast pilots and tide tables as the name indicates compiles all of the various publications of the Government into one comprehensive index. They show all charts individually listed and priced as well as other government publications which are useful to the motor boatman. The addresses of all agencies where government charts and publications may be purchased are also given

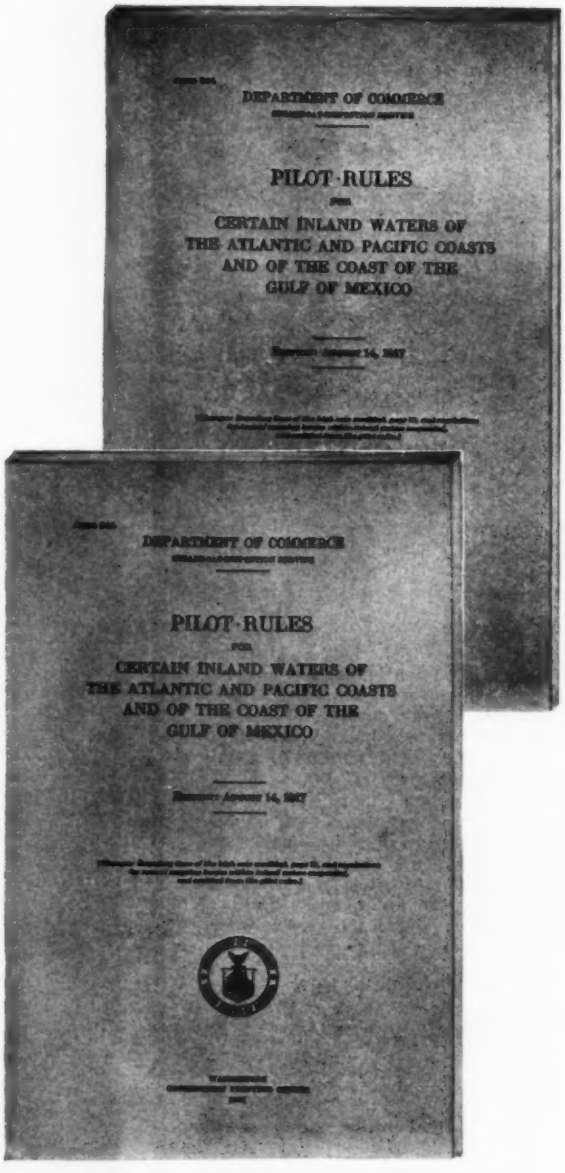


Fig. No. 126—The Pilot Rules are the regulations governing the conduct of the small boat navigator under all conditions. One of the essential requirements is that two copies of the pilot rules be carried on board the boat at all times. They contain the law relating to the navigation of vessels on certain inland waters, the boundary line of the high seas, diagrams of the pilot rules, the light requirements and a large amount of other useful information

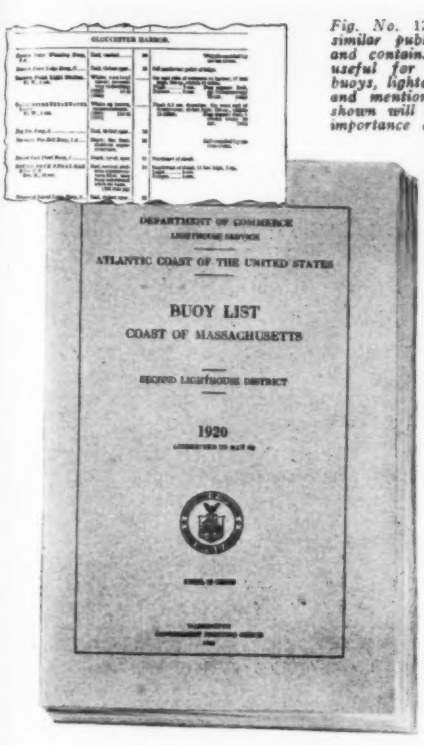
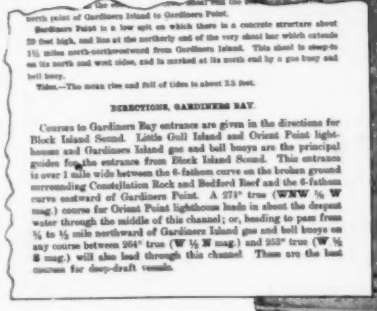


Fig. No. 127—The Buoy List is a similar publication to the light list and contains information particularly useful for coastwise piloting. All buoys, lighted or unlighted, are listed and mentioned. The specimen page shown will show clearly the relative importance of the different lights as mentioned under Fig. 124. The information given is the name and character of the aid, a description of the structure or buoy, the depth of water at mean low tide, and remarks of a useful nature



north point of Gardiners Island to Gardiners Point.

Gardiners Point is a low spit on which there is a concrete structure about 20 feet high, and lies at the northerly end of the very shoal bar which extends 1½ miles north-northwestward from Gardiners Island. This shoal is steep-to on its north and west sides, and is marked at its north end by a gas buoy and bell buoy.

Tides.—The mean rise and fall of tides is about 2.5 feet.

DIRECTIONS, GARDINERS BAY.

Courses to Gardiners Bay entrance are given in the directions for Block Island Sound. Little Gull Island and Orient Point lighthouses and Gardiners Island gas and bell buoys are the principal guides for the entrance from Block Island Sound. This entrance is over 1 mile wide between the 6-fathom curve on the broken ground surrounding Constellation Rock and Bedford Reef and the 6-fathom curve eastward of Gardiners Point. A 271° true (WNW ¼ W mag.) course for Orient Point lighthouse leads in about the deepest water through the middle of this channel; or, heading to pass from ¼ to ½ mile northward of Gardiners Island gas and bell buoys on any course between 264° true (W ½ N mag.) and 253° true (W ½ S mag.) will also lead through this channel. These are the best courses for deep-draft vessels.

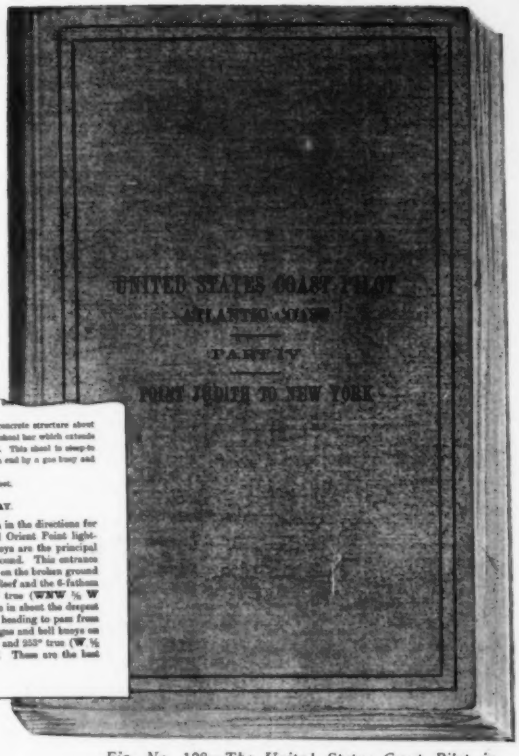


Fig. No. 128—The United States Coast Pilot is a series of volumes which gives most useful information and sailing directions for all the waters within the scope of the volume. The entire coast is well covered and described. Sailing directions for harbors, depths of water, compass courses, strengths of current, location of repair facilities and railways and a vast store of other useful data are given. With the help of the Coast Pilot strange harbors can be safely entered and all necessary information about the locality can be quickly found

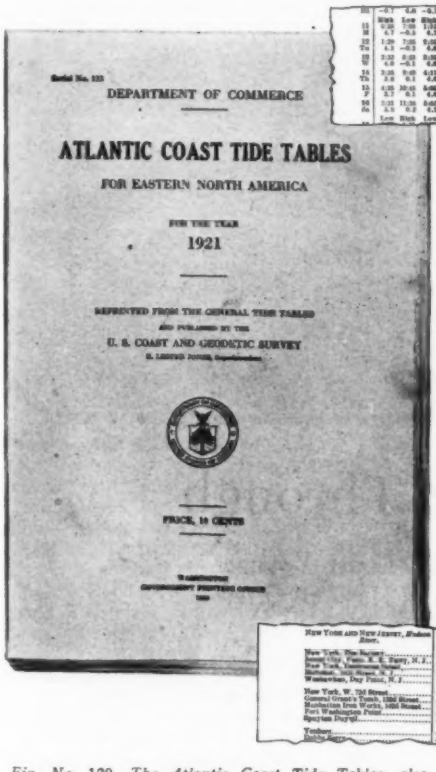
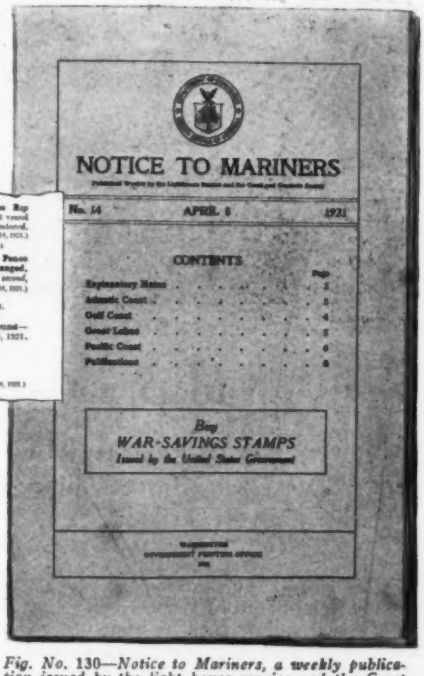
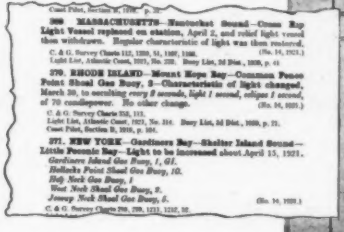


Fig. No. 129—The Atlantic Coast Tide Tables, also published for the Pacific Coast, and in a general table combining both coasts, is one of the most useful publications. The tide predictions are given for every day in the year at 24 standard ports of reference. The time and estimated height of each tide cycle is given and by referring to the table of supplementary reference points the tide stage at practically any point on the coast can be quickly determined. General information about the strength of current at various points and tables of sun and moon rising and setting times are also included





270. RHODE ISLAND—Mount Hope Bay—Common Fence Point Shoal Gas Buoy, 3—Characteristic of light changed, March 30, to occulting every 8 seconds, light 1 second, eclipse 7 second, of 70 candlepower. No other change. (No. 14, 1921.)

C. & G. Survey Charts 112, 113.
Light List, Atlantic Coast, 1921, No. 314. Buoy List, 2d Dist., 1920, p. 71.
Coast Pilot, Section II, 1918, p. 166.

271. NEW YORK—Gardiners Bay—Shelter Island Sound—Little Peconic Bay—Light to be increased about April 15, 1921.
Gardiners Island Gas Buoy, 1, 6ft.
Hollocks Point Shoal Gas Buoy, 1?.
Hog Neck Gas Buoy, 1
West Neck Shoal Gas Buoy, 2.
Jessup Neck Shoal Gas Buoy, 5.

C. & G. Survey Charts 260, 269, 1211, 1212, 1?

Fig. No. 130—Notice to Mariners, a weekly publication issued by the light house service and the Coast and Geodetic Survey is the means adopted by the Government to enable the sailor to keep his charts and other publications strictly up-to-date. All changes which are made are listed and referred to the other publications which they affect. The specimen page reproduced gives the information about changes in lights at various places which it is well for interested persons to know about. Notices to Mariners are distributed free by the Division of Publications, Department of Commerce, Wash., D. C.

Hippocampus passing down the East River bound for San Francisco

Squibb takes his breakfast while underway doing a trick at the tiller

Photographs by M. Rosenfeld and A. F. Loomis

Hippocampus Sees It Through

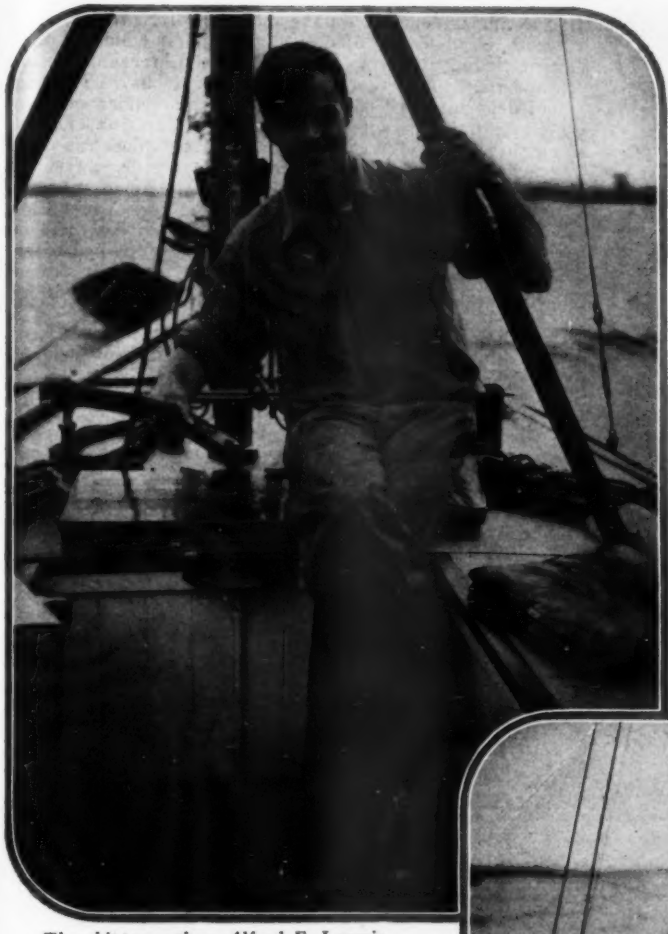
Auxiliary Yawl on First Leg of Coast to Coast Voyage Proves Ability to Take What the Elements Have to Offer

By Alfred F. Loomis

PROMPTED by the kindliest feelings in the world, the unofficial board of relatives and friends of the tribe of Hippocampi warned us of adverse weather conditions along every stretch of the 7,000-mile run to San Francisco except that in which she received her baptism by storm. Consequently, when the start was made from New York, the outer entrance to the Delaware River meant nothing to us. Now it marks the spot where the crew of the sea-going 28-foot yawl learned that she will take any zephyr that travels from here to there at no greater velocity than 75 miles per hour, or more if it should blow harder at times.

Less than two days out of New York we bumped into a gale that sent the other small fry scooting for safety to Atlantic City, Cape May, and the Delaware Breakwater, and started our wherry on an uncharted cruise of its own; but we held our course and weathered it in man-o'-war style. When it comes to sailing in light airs or whole gales, Hippo' is there.

At the last writing, less than a month ago, Hippocampus was on dry land at New Rochelle, with the swish of paint-



The skipper-author, Alfred F. Loomis

brushes filling the April atmosphere. But before the full moon brought its spring tides she was ready for the water, and on April 24th slid into her element with something closely resembling a sigh of relief. Inspection revealed that except for a few open cocks and drain plugs in various parts of the engine's anatomy she was tight. These valves I had neglected to close, and they merrily filled the bilge while we busied ourselves on deck. After the steady drip of water had discovered them to us, however, the accumulation was pumped out and her keel has remained practically dry except on the night of the storm, to which we are coming by degrees.

One other little oversight nearly marred the launching. Just after I had let go the anchor, the first and second mates, who were in a skiff at the business end of the towline, called my attention to an imposing sign which tardily informed us that we were over a cable crossing and were requested not to anchor. To remember everything all at once is difficult for me, and it was much more good luck than intelligence that saved me from fouling the cable. But no harm was done, and under the direction of Al Chambers, the second in command and the first in sailing knowledge, we sorted out the running rigging and got the blocks and lines in place.

For the next few days we were favored by good weather which permitted us to clear up the odds and ends; but on the sailing date, Thursday the 28th, so many were the pieces of equipment still to be collected from various sources that we were unready to start. We should have got under way the next day if it hadn't been Friday and if the rain hadn't prevented the taking of pictures, and Saturday saw us still lying at Port Washington, to which we had put from my home port of Huntington. As the preceding night was the first on which the whole crew had slept aboard, this becomes a propitious moment for introducing them.

John Albert Chambers, an ex-sub-chaser man and j. g. lieutenant in the Reserve, may be recognized in the accompanying pictures by the busy expression on his face. He comes from Salem, Mass., where they sail boats the day after leaving the cradle, and what he doesn't know about small boat handling has yet to be discovered. Under the direction of George Le Sauvage, friend of all sub-chaser men in the Great War, he saved New York from the submarines, and after that went across as far as the Azores and with the conclusion of festivities returned to the West Indies to give the Virgin Islands and Islanders a treat. Three years of service in the S. C.'s endowed him with a roving foot, and now he is happiest when we are under way.

Paul Squibb, second mate, engineman and seagoing commissary extraordinary, has done all his boating in the Bay of Fundy and is only thoroughly contented when the tide is battling with the wind and lifting the waves higher than the main truck. When a gale tries to yank the sticks out of the boat and the combers rake her fore

The crew which will take Hippo' to the Pacific, Paul Squibb, John Albert Chambers and Alfred F. Loomis

Underway under jib, jigger and power, the mainsail loosely furled awaiting another breath of air

Getting under way on the morning of Saturday, April 29th, we sailed out of the bay with a fair wind and down the Sound to Throgs Neck, where the breeze died away and the little two-cylinder Palmer got busy. The hour of departure had been calculated for a rendezvous with Rosy, the seagoing photographer in his cruiser Foto, and it was anything but favorable for a quick run down the East River; but, bucking a head tide, we slowly forged ahead, and by two in the afternoon were secured at the 23rd station of the New York Yacht Club. There, in a damp and dismal rain which had held off until the pictures were taken, we said good-bye to ex-sub-chaser men of assorted sizes and to other friends and relatives and received the parting blessings of numerous kind-hearted citizens.

These blessings took the very tangible form of items of ship's equipment and included the following valuable articles: One Theroz two-burner stove with enough canned fuel to keep us in fried eggs for a month of Sundays; one mechanical stethoscope for testing the heart action of the motor; one Solomon boat cushion which has already lightened the hours of duty at the tiller (but which, be it hoped, may never exercise its life-saving function); two seven-foot ash oars from Woodward & Chamberlain, which at present repose in the hold mourning the lost wherry, and a mate's sextant from Brandis & Sons. This princely *bon voyage* present is a ten-second instrument that thrills the hand that holds it. With its full equipment of telescopes it promises to give me some of the happiest moments of the cruise—for, when all is said and done, the best part of sailing or motor boating is, to my mind, deep sea navigation.

With every square inch of stowage room filled until the rotund sides of the little hippopotamus seemed to bulge still farther, and with a rainproof

(*Continued on page* 102)

and aft, Squibb lends his oilers to Chambers and stays below, reading aloud information about lights and buoys, and catching the silverware on its way from the galley to the bilge. Just one thing about nautical life perplexes Squibb. He can't savvy the barometer. Although he has studied it from every angle and made due allowances for the frailty of man-made instruments, he still believes that it is affected by the law of storms. But we are not with him. We saw it fall from 29.95 to 29.59 and bring a northeaster, rise again to 29.78 and bring another, remain stationary for 24 hours and fetch a third, and we know that it is absolutely lawless.

Introductions having been accomplished, we find all hands at their mooring stations off the Manhasset Yacht Club.

The skipper coils off in the mainsail

Sailing free down the Virginia coast. Note Chambers' seagoing yachting cap

Airing bedding at Assateague, Va., after the storm

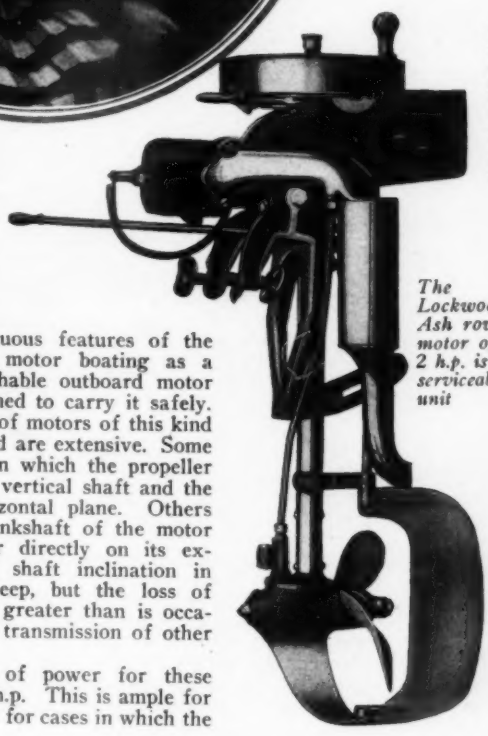
Summertime exploring with the aid of an outboard motor

Motor Boating on a Small Purse

The Lover of Outdoor Life Can Enjoy the Sport of Motor Boating by the Aid of a Portable Outboard Motor

By F. W. Horenburger

Operation of these units is so simple that special skill is unnecessary



The Lockwood-Ash rowboat motor of 2 h.p. is a serviceable unit

ONE of the conspicuous features of the rapid growth of motor boating as a sport is the detachable outboard motor and the small boat designed to carry it safely. There are many builders of motors of this kind and the varieties produced are extensive. Some builders favor the type in which the propeller is placed at the end of a vertical shaft and the motor carried in a horizontal plane. Others prefer to extend the crankshaft of the motor and mount the propeller directly on its extremity. The angle of shaft inclination in these types is rather steep, but the loss of efficiency is probably no greater than is occasioned by the bevel gear transmission of other types.

The general average of power for these portable units is about 3 h.p. This is ample for all ordinary requirements, for cases in which the motor is to be used in conjunction with a rowboat. It occasionally happens that these motors are needed for heavier boats and there is even one small 18-foot cruiser built to be driven by this type of engine. Here it is advisable to use the more powerful motors of the two-cylinder types which develop up to 5 h.p. In fact cases have come to our notice where two of these portables have been coupled to a houseboat with a flat bottom hull and were quite successful in moving it from place to place.

The sport fisherman finds he can get out further from shore in his quest for game, and when it comes to trolling, why the little motors are able to move the boat at just the correct speed for all cases.

What can be more convenient than a portable motor to the big yacht tender. Generally when it comes time to go ashore everybody is in a hurry. In nearly every instance the visiting guests have lingered long and must hasten to catch cars or trains and every minute counts. In such anchorages where there is a swift current running it is a tedious job to row a boat loaded with four or five persons against the tide to the landing stage, and did you ever notice, the tide always manages to be running the wrong way? The handy little motor over the stern is ready at all times to respond

This boat, very handy for fishing, is built by the Gidley Boat Co.

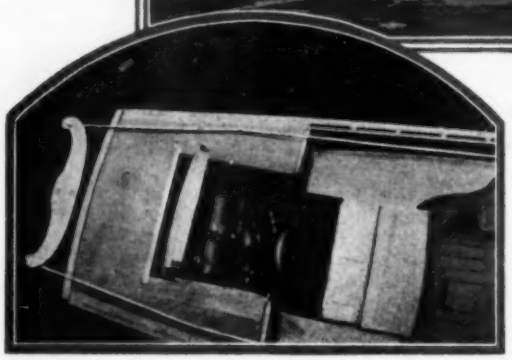
to a turn of the handle and be off with its load. There are other uses too for these motors. At many summer resort lakes in the mountains the vacationist spends the greater part of his day on the lake in a small boat. How convenient it is, to be able to move about without any exertion and vacation in a real leisurely fashion.

For operation by children and unskilled persons these motors are ideal. Most makes of motors control by means of a pushbutton on the handle. The motor may be quickly started, stopped or reversed and the boat is always under perfect control by reason of a rudder which is fitted close to the propeller. For ignition purposes there is generally a small magneto built into the same unit as the flywheel. This simplifies the ignition and obviates the necessity for batteries and coil to be carried separately. For those who prefer to place their trust in batteries this form of ignition is optional on many motors.

An 18-foot cruiser built by the Skaneateles Boat & Canoe Co.

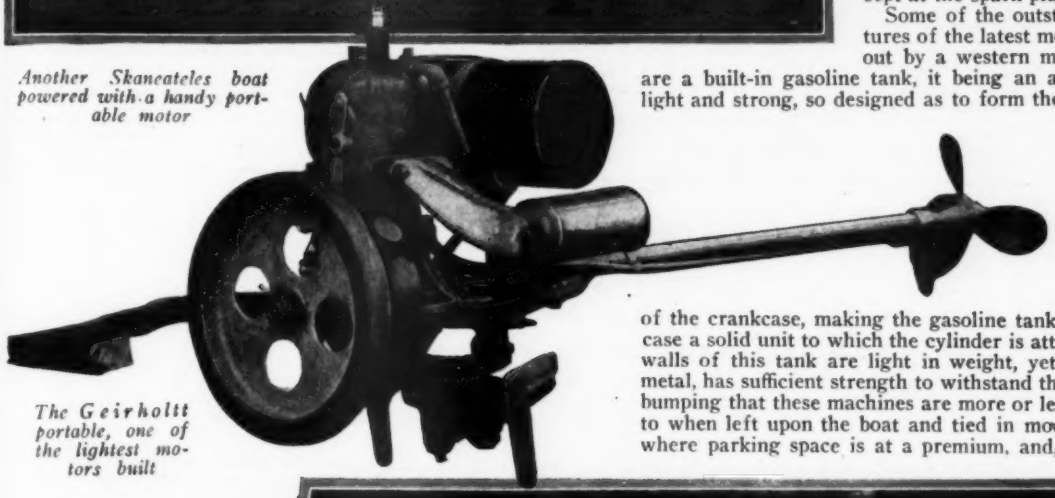
A V-bottom design of the Everett-Hunter Boat Co. for outboard motors

The little boat below has a Gierholtt portable motor permanently installed



The general method of starting these small machines consists of twirling the fly wheel by means of a small handle placed there for that purpose. Some, however, have a built-in device which consists of a strap and handle which spins the motor when it is pulled. A clutch which permits of a free-engine is an advantage provided by some builders, while others can tip their motor up so that the propeller can be withdrawn from the water and moved over any shallow places or cleared of obstructions, weeds, etc. The extensive use of aluminum for crankcase castings and other parts

Another Skaneateles boat powered with a handy portable motor



The Geirholtt portable, one of the lightest motors built

quart of fuel per hour and a mileage of 25 miles to the gallon is not unusual.

The cost of maintenance is also a negligible quantity. If the cost of the motor is divided by its useful life it will be found in general to be under $10.00 per year. The simplicity of the little motors is such that there is very little to go wrong with them. Their principal requirements being that they be kept reasonably clean and that the ignition parts be kept clean and free from moisture. One of the greatest evils of any electrical device is moisture in the wrong place. Contacts with water present will short-circuit and the necessary spark will occur any place except at the spark plug points.

Some of the outstanding features of the latest models turned out by a western manufacturer are a built-in gasoline tank, it being an alloy casting light and strong, so designed as to form the upper half of the crankcase, making the gasoline tank and crankcase a solid unit to which the cylinder is attached. The walls of this tank are light in weight, yet, being cast metal, has sufficient strength to withstand the accidental bumping that these machines are more or less subjected to when left upon the boat and tied in mooring places where parking space is at a premium, and, because of strength and rigidity, does entirely away with the vibrant sounding board effect of the older style sheet metal gasoline tank. This new aluminum tank is provided with a removable top to allow of easy cleaning out and washing of the tank if occasion ever necessitates it. It is further provided with a very efficient removable strainer, which effectually

(*Continued on page* 98)

has served to bring the weight down noticeably. In fact the average weight of all the motors tabulated on page 100 is only about 75 pounds.

The portability of these little motors has done much to popularize them. They can be packed into a carrying case and readily moved about from place to place. Of course, the weight of 75 odd pounds is not such as to permit of their being carried by children. In spite of the fact that they are termed portable it requires some effort to move them. One of the principal objections to the large size built-in motors, namely the operating cost, does not exist with these little machines. The tanks only hold a gallon or thereabouts of gasoline and the cost of this is trifling. In most of the motors particularly of the two-cycle type the lubricating oil is mixed with the gasoline and furnishes at once, an automatic positive lubrication system which will not fail to work. These little machines will operate on about one

An Evinrude outboard motor furnishes the power for this 15-foot Everett Hunter round bottom boat

SMALL MOTOR BOATS

Their Care, Construction, and Equipment

A Monthly Prize Contest Conducted by Motor Boatmen

Questions Submitted for the August Prize Contest

1. Discuss the round and V-bottom types purely from the standpoint of the amateur builder, taking up each step of the work (keel, framing, planking, decking, interior finish, etc.) and estimating the relative time and labor required. Finally, sum up the net percentage of time saving that may be expected in building the easier type.

(Suggested by J. G. H., Dunedin, Florida)

2. What means have you adopted to keep rains and heavy dews from washing dust and dirt from cabin top and streaking white topsides of boat. Also give any other kinks which may be useful in keeping the boat looking clean and trim.

(Suggested by W. E. M., Philadelphia, Pa.)

3. Give specific instructions, with illustrations, for taking up wear in connecting rod and crank shaft bearings.

(Suggested by J. F. C., Providence, R. I.)

Rules for the Prize Contest

ANSWERS to the above questions for the August issue, addressed to the Editor of MoToR BoatinG, 119 West 40th St., New York, must be in our hands on or before June 25, (b) about 500 words long, (c) written on one side of the paper only, (d) accompanied by the senders' names and addresses.

The name will be withheld and initials used.

QUESTIONS for the next contest must reach us on or before June 25. The Editor reserves the right to make such changes and corrections in the accepted answers as he may deem necessary.

The prizes are: For each of the best answers to the questions below, any article or articles sold by an advertiser advertising in the current issue of MoToR BoatinG of which the advertised price does not exceed $25, or a credit of $25 on any article which sells for more than that amount. There are three prizes—one for each question—but a contestant need send in an answer to only one if he does not care to answer all.

For answers which we print that do not win a prize we pay space rates.

For each of the questions selected for use in the following month's contest, any article or articles sold by an advertiser advertising in this issue of MoToR BoatinG of which the advertised price does not exceed $5, or a credit of $5 on any article which sells for more than that amount.

All details connected with the ordering of the prizes selected by the winners must be handled by us. The winners should be particular to specify from which advertisers they desire to have their prizes ordered.

The Design and Arrangement of the Gasoline Line

Many Useful Suggestions on Conveying Fuel from the Tanks to the Motor and Hints on Sizes of Tubing and Fittings

Answers to the Following Question Published in the April Issue

"Design the best form or arrangement of gasoline line for conveying fuel from the tank to the carbureter keeping in mind the kind and size of pipe or tubing to use, fittings, strainers and best method of eliminating all trouble from clogging of the line."

A Complete Gasoline Installation

(The Prize-Winning Answer)

A COMPLETE installation from the filler cap to the carbureter is illustrated herewith.

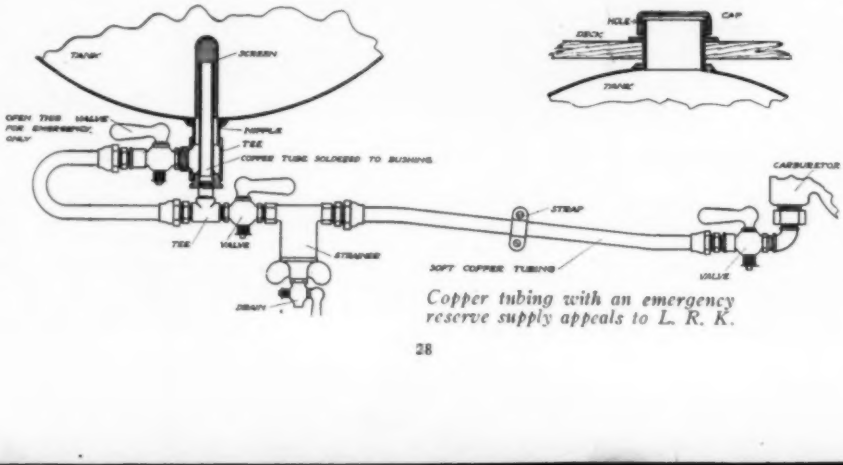
If the filler is on deck, it is well to use the type of fitting that has an upstanding pipe, covered with a cap, rather than the flush type, to prevent dust and even water getting into the tank when the flush plug is removed. This cap should have a small hole in it drilled at an angle so that rain will not get into it. This hole admits air as the gasoline runs out, preventing the tank becoming air bound.

The tank outlet can be fitted simply with a valve and strainer, or an arrangement similar to that illustrated, which has the advantage of holding the last gallon or so in the tank for an emergency. If you have ever been stuck this way you will appreciate this feature.

The assembly is made up of brass pipe and fittings. A center tube (a piece of the copper gas line) is soldered to a bushing, as shown, and extends up into the tank an inch or inch and a half, and all the gas below this level will be held for emergency, and can be drawn off by opening the valve, permitting it to run back into the main line. The nipple that screws into the tank, and through which the emergency gas runs, has a screen soldered to the top of it, extending up and enclosing the main outlet tube. This is a piece of copper or brass screen having about one-sixteenth-inch holes. Do not use the fine mesh gauze used in strainers, as the purpose of this screen is only to keep the large pieces of rust, scale, chips, etc., from getting into or over the outlet.

The next valve is the main shut-off of the system, and is placed before the strainer so that the flow can be stopped when it is necessary to take the strainer apart to clean the gauze, which should be examined only occasionally, and then care should be taken to get it tight again, using shellac on the joints. Some strainers are constructed differently, but they all have a reservoir to hold the accumulated dirt and water and a cock for draining it off, which should be opened frequently. In installing the strainer, care should be taken to have the gas run through it the right direction.

The gas line extending from here should drop slightly as it runs to the carbureter. It should be of soft drawn seamless copper tubing, securely held with straps, and protected from injury or dislodgment. The line itself should be run as straight as possible, but at the ends allow some excess, slightly curved or coiled (not coiled tight like a spring, for that is hard to clean out), to allow for expansion, vibration and cutting off a little in case new fittings

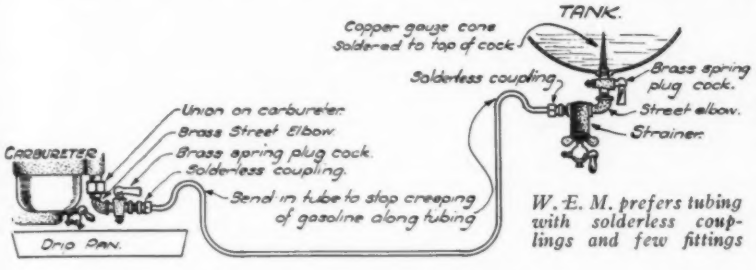


Copper tubing with an emergency reserve supply appeals to L. R. K.

have to be applied. Before entering the carbureter there is another valve which will probably be used the most as a shut-off, because it is convenient to the engine.

It is assumed that the tank can be placed high enough above the carbureter that it will feed by gravity. If not, then it will be necessary to install a vacuum pressure, or small tank and pump system, all of which are extra equipment not treated here. On account of the gravity system being so simple and satisfactory, it should be used if at all possible.

Seamless steel tanks, also riveted boiler type, galvanized



W. E. M. prefers tubing with solderless couplings and few fittings

or tinned, are good. Copper tanks built to shape are expensive, but the best. Tanks built to shape from ordinary galvanized iron are not so good. Large tanks have baffles. The size will depend on the engine, use of the boat, available space for it, etc. Figure one pint per horsepower every hour to get a rough hourly consumption. Install as large a tank as possible.

The valves should be of the spring key type, with plugs well ground in. Pay a little more and get good ones, as the cheap ones are often prone to slow leaks.

The gas line is of soft drawn copper seamless tubing. One-fourth-inch outside diameter is the smallest that should be used, and has given good results with an 8 h.p. engine where the tank was 12 feet away. This installation never gave any trouble from clogging or insufficient feed. The ⅜-inch size will take care of the ordinary small cruiser with engine up to 25 h.p. easily.

The fittings for the tubing can be secured in several types, compression and brazed. I prefer the type where the tube iteslf is flared and compressed against a conical part. Brazed joints are liable to melt during a fire, feeding gas to the flames, whereas otherwise the fire might have been put out sooner.

All screwed fittings should have clean threads, and coated with thick shellac before fitting up.

The line, if installed as above, will probably never clog up, but on account of the union fittings it is easy to remove it and blow it out if necessary. The most frequent trouble will be water in the strainer and carbureter, and these should be drained frequently. L. R. K., Philadelphia, Pa.

The Gasoline Line

THE best form of gasoline line from tank to carbureter is one composed of flexible copper tubing in one piece with suitable strainers and a minimum of fittings. The one shown in the drawing has been in successful operation for over five years and has required no other attention than blowing out a few flakes of scale from the tubing and a periodical cleaning of the strainer.

Starting at the ground joint union on the carbureter (with which almost all carbureters are supplied) we have a brass street elbow, that is, one with one male and one female end. This is usually ⅛-inch iron pipe size, although some large motors may have ¼-inch or ⅜-inch carbureter connections. Next there should be a shut-off cock of the same size as the elbow, also with one male and one female end, and into this is screwed the solderless coupling which connects the flexible tubing to the cock. These solderless couplings are made for ¼-inch, 5/16-inch or ⅜-inch outside diameter copper tubing and are threaded ⅛-inch iron pipe size for the ¼-inch and 5/16-inch and ¼-inch iron pipe size for the ⅜-inch tubing size. There is a small brass sleeve which is slipped over the tubing and which is compressed into its seat by the nut which fits over it. No tools other than a monkey wrench are necessary to make up the joint.

For the average motor 5/16-inch tubing will be the proper size. It is not advisable to use the ¼-inch size on account of its liability to choke up more readily, except on the smallest motors, say up to 3 h.p., however, and even here the slight additional cost of 5/16-inch tubing will be more than made up by the advantages of heavier connections, etc. On large motors having ¼-inch carbureter connections the ⅜-inch tubing should be used.

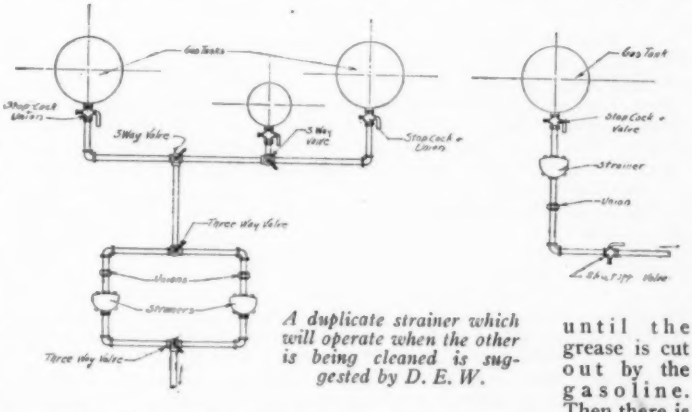
The tubing should be in one piece if possible and connected to the strainer at the gasoline tank end with another solderless coupling. If the run is too long for one piece, 12 feet, of tubing connection which is the same as the coupling excepting that it is arranged to take tubing at both ends. Next we connect through a strainer, then a street ell, plug cock, and then to tank. The strainer is a very necessary adjunct to prevent sediment also water getting into the line and carbureter. The one shown contains a copper gauze basket open at the bottom where the gasoline enters. The gasoline flows through the sides and top, leaving all dirt inside. There is a small drain cock at the bottom which drains from the inside of this basket through which all water and dirt can be drawn. If there is an abundance of water in the gasoline, of course it will overflow the strainer and get into the carbureter, but for the ordinary condensation moisture I have found the strainer to be an efficient trap. It has a wing nut cap on the bottom to which the strainer basket is attached and by which the basket can be withdrawn if necessary for cleaning.

There is one more critical point at which stoppages due to dirt are liable to occur. That is right at the tank outlet. A small piece of copper gauze bent conical in shape and stuck down into the plug cock and soldered fast will prevent trouble at this point. The gauze cone should be at least 2½ inches long, so as to provide generous straining surface. See drawing.

With this arrangement the only clogging that can occur will be from formation of scale inside the tubing which I have found a very slow process and one which will rarely give any trouble if the tubing is disconnected each season and blown clear with the mouth.

All joints should be made up with shellac or a paste made of glycerine and litharge. Nothing is needed in the solderless couplings.

I should also say a word about plug cocks. Don't buy a cheap gasoline cock. They are made tight with a heavy grease instead of patient grinding and will stay tight only until the grease is cut out by the gasoline. Then there is the continual annoyance of gasoline odors, dripping, etc., to say nothing of the fire risk. Buy a good cock, well ground in with a spring take up for wear. W.E.M., Phila., Pa.



A duplicate strainer which will operate when the other is being cleaned is suggested by D. E. W.

(*Continued on page* 56)

Installing and Protecting Electric Wiring

Methods of Installing the Wiring So as to Eliminate Danger of Short Circuits and Grounds

Answers to the Following Question Published in the April Issue

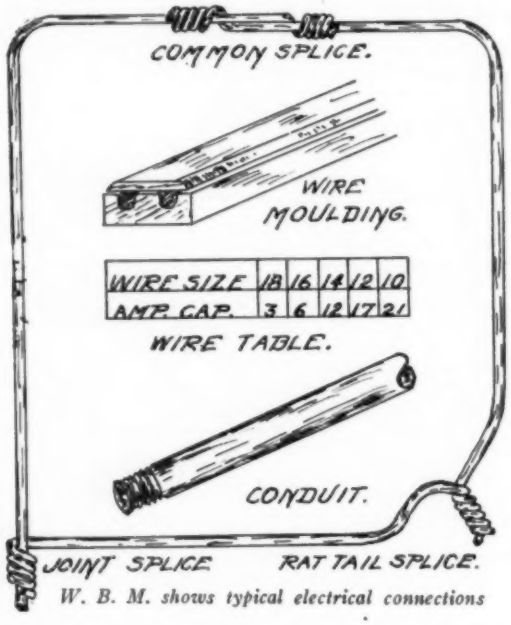
"Explain and illustrate best method of installing the ignition and lighting wires to protect from moisture either in open craft or cruisers."

Protecting Wiring from Moisture

(The Prize-Winning Answer)

MOISTURE and damaged insulation are the causes of practically all short circuits in the ignition and lighting wiring on a motor boat. It is the short circuit which does all the damage or causes all the trouble, and to avoid damage or trouble we must eliminate all chances of a short circuit or mechanical damage to the wiring.

The manner in which this is accomplished depends largely upon the type and size of the boat. Wiring in conduit is absolutely waterproof, but it is not always practical to install all the wiring on an open boat or small cruiser in con-



W. B. M. shows typical electrical connections

duit. There are a number of flexible conduit materials on the market and they are proof against mechanical damage and dampness but are not waterproof. Loom may be submerged for several days without leaking and well insulated wire without joints will withstand submersion for quite a while. The special telephone service at the college rowing races held at Poughkeepsie was furnished over common weatherproof twisted pairs anchored to the bottom. These cables were submerged for two days with no interruption of service.

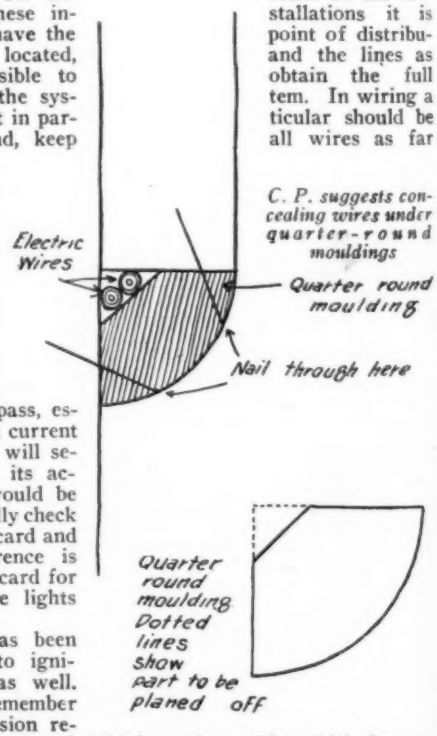
Wire moulding is especially well adapted for wiring on motor boats where it can be protected from water. As ordinarily used, moulding is not dampproof, but by a little trouble it may be made so. Three coats of good spar varnish, or a coat of hot paraffin on the inside will effectively prevent the wood from absorbing moisture. By getting the moulding of the same material as the cabin interior, using round head brass screws to fasten the cap and finishing to correspond with the trim, a very neat and satisfactory installation can be made with but few tools and at little expense. Remember that paint is not an insulator and don't paint the inside of the moulding or cap.

When it is practical install the wiring in conduit. This is approved by the steamboat inspection service and the underwriters and is undoubtedly the best. The conduit is a soft iron pipe easily bent to any shape and threaded for connection to condulet fittings, which, if of the moisture-proof type, will keep the wiring absolutely dry. All joints and caps on marine work should be made up with lead paint. When working the conduit it is advisable to cut the pipe with a hack saw and ream off the burr to avoid damaging the insulation when the wire is drawn in.

Install the conduit complete, locating and fitting up all junction boxes and outlets before installing the wiring. To put in the wires fish them through with a fish tape or snake. A piece of common iron wire is often used and answers the purpose admirably. First run the tape through the conduit, fasten the wires to it and draw them in.

For wiring use waterproof or weatherproof stranded wire of a size suitable for the current as shown in the table. If obtainable, a plain and a spot wire will save much ringing out of circuits. All joints should be firmly made, soldered and taped first with rubber tape and then friction tape. Waterproof outlets, or deck plugs as they are commonly called, should be used for all outside connections.

Where the conduit is objectionable moulding, finished as above, used in connection with standard porcelain outlets and adapters for candelabra or bayonet, base lamps is recommended. The wires are not fastened into the moulding but are held by friction and the cap. The moulding should run along the sheer clamp and across the carlins in such a manner as to balance even if some of the moulding is empty. Where more than one circuit is used, run one on each side. On account of the low voltage of these installations it is desirable to have the point of distribution centrally located, and the lines as short as possible to obtain the full efficiency of the system. In wiring a boat one point in particular should be borne in mind, keep all wires as far as possible from the compass, and run both sides of the line together, not one on each side. Any current of electricity passing near the compass, especially direct current as here used, will seriously affect its accuracy. It would be well to carefully check the deviation card and if any difference is noted make a card for use when the lights are burning.


C. P. suggests concealing wires under quarter-round mouldings
Electric Wires
Quarter round moulding
Nail through here
Quarter round moulding Dotted lines show part to be planed off

All that has been said applies to ignition wiring as well. In addition, remember that high tension requires special stranded high-tension cable which is protected by a moisture- and oil-proof braid. Stranded braid-covered primary wire is advised for all exposed low-tension wires.

W. B. M., Newburgh, N. Y.

Repairing Leaks in Canvas-Covered Decks

Several Useful Methods of Insuring a Water Tight Job When the Canvas Begins to Show Weakness

Answers to the Following Question Published in the April Issue

"How could you locate and repair leaks in a canvas-covered deck?"

The Hidden Leaks

(The Prize-Winning Answer)

LEAKS in canvas-covered decks result from two general causes, injury and rotting. The first are simple and easily found. The canvas may be torn, as by careless use of a boat hook in fending off, or it may be chafed through by some heavy object, as an anchor or a water jug carried on deck. In either case, the hole should be trimmed neatly and a filling piece of canvas fitted exactly to it and set in with paint or marine glue. This is to give a level surface and avoid hollows or lumps showing in the upper patch. When this is done, cut a patch of suitable size to cover the hole well. It is always best to make patches round or oval, because the sharp corner of a rectangular patch is hard to fit tightly and sure to curl up or be kicked loose. Now scrape the old paint off the canvas where patch is to go, so the cementing agent can get a good grip on the fibres. Thick white lead paint may be used, but marine glue is far better. It should be applied to patch and deck and the two pressed together with a hot iron. Then put in a row of 3/8-in. copper tacks around the edges spaced closely and uniformly.

Sometimes a copper binding strip is put around the edges of the patch, to prevent scraping them loose, but this is hardly ever necessary unless the patch is in a place that must be walked on or chafed constantly. In either case, apply paste canvas filler, or putty mixed very soft with turpentine, and rub into the pores of the canvas and around the edges. When hard, sandpaper and give three coats of deck paint, sanding well between each.

The other class of leaks is more difficult to locate and repair. They usually occur around the coamings of hatches, or the companion slide, or the cabin trunk if the boat has one. A poorly fitted quarter round allows moisture to seep in (Fig. 1), which in time rots the canvas, especially if the coaming was put on before the canvas under it was thoroughly painted. Careful inspection outside may indicate the location of the leak by discolored canvas. The best time to find a leak is during a heavy rain. Drops of water will run down to the lowest point of a sloping edge before falling off, so if you see drops coming from a sound beam, follow up the edge to its highest point, or to a corner, and you will probably find the point of entry.

If the coaming can be taken off, the best way to make repairs is shown in Fig. 2, applying a new strip of canvas by the same process described for patching a hole. Then put down the coaming again and tack to inside. Often, however, inaccessible or rusted fastenings make removal impossible. In that case it will be necessary to cut a rabbet in the coaming for a new canvas strip. If but a small place is to be fixed, the cutting can be done with a chisel, but when this sort of rot starts, it usually goes all around and it is cheaper to fix the whole thing at once. In such a case a rabbet plane, Fig. 4, costing only a dollar or so, will save 90% of the time and labor required.

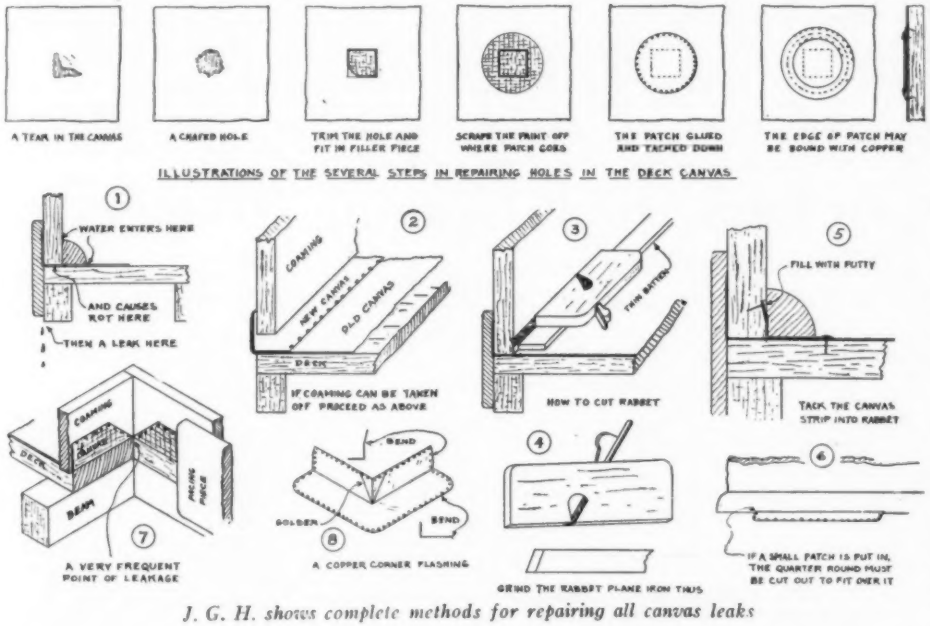
With the rabbet cut, tack a strip of canvas in it, with thick paint or marine glue, as at Fig 5. Hold the quarter round lightly in place and stretch the canvas under it, tacking it to deck. Then coat heavily with thick paint and fasten the quarter round in tightly with screws, not brads or tacks. The purpose of the rabbet is evident from this sketch. It diverts water that may come down and prevents it from getting between canvas and coaming. Where neat appearance is desired the deck tacks may be so placed as to come under and be concealed by the quarter round, but it is more difficult to make a tight joint this way, and it is perhaps better to have the fastening in view where any loosening of the cement can be instantly observed and remedied.

A very frequent and troublesome source of leaks is the corner of a hatch where the canvas is turned up. Careful work makes a tight joint regardless of the turn-up, but poor work results in an early leak. The only way to fix it is to make a corner flashing It is simply cut and the flaps bent up, then a V-shaped bit of copper, bent on its center line, is soldered in the V left by the turned-up flaps. Tack the upper edges in a rabbet in the coaming as described. The lower edges should be just turned over so they will bite into the canvas a bit and make a water-tight joint when tacked down in a bed of white lead. The quarter round will cover all. Note Fig. 6 when replacing quarter rounds.

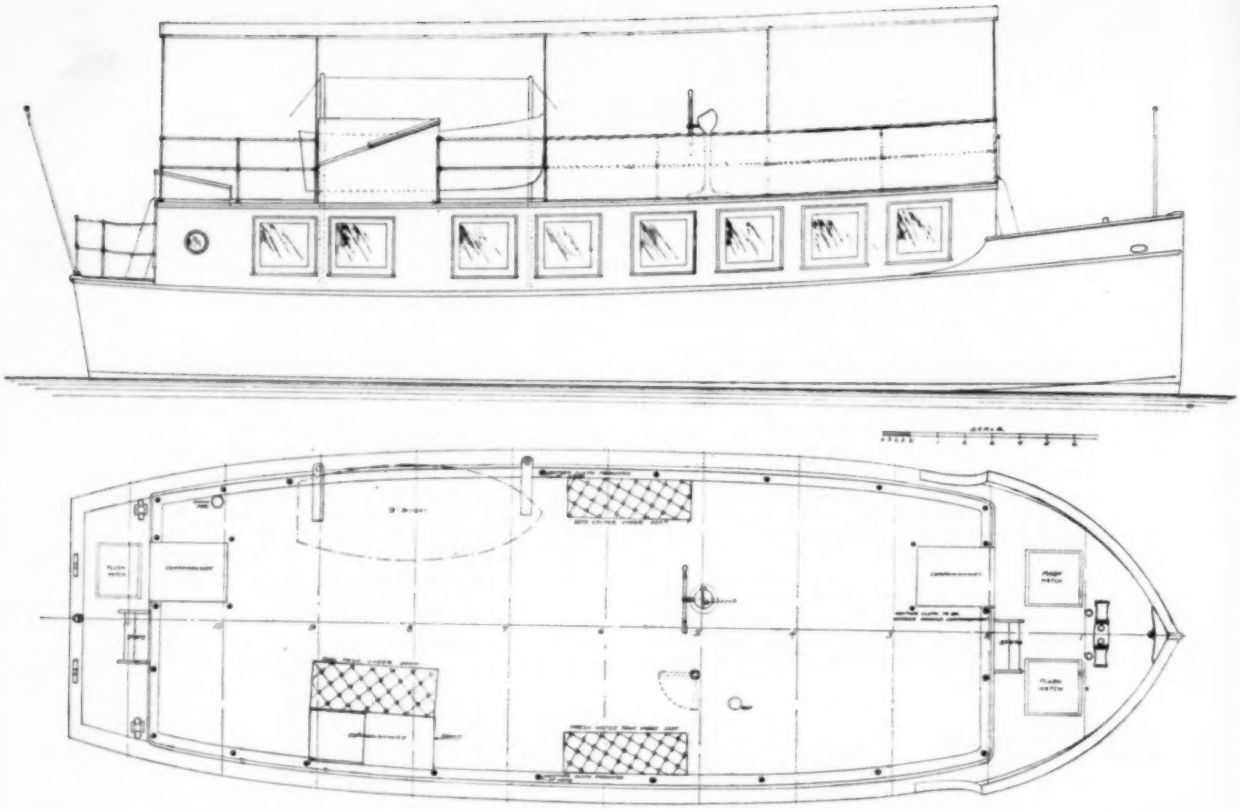
An excellent cement for waterproof patching may be made by dissolving in a double boiler or over a slow fire 60 parts lard, 40 parts salt, 33 parts wax and adding 40 parts pulverized charcoal to the molten mass. Apply hot and iron.

A putty for the waterproof closing of any small opening can be made by mixing litharge and glycerine. This mixture hardens very quickly.

J. G. H., Dunedin, Fla.



J. G. H. shows complete methods for repairing all canvas leaks



Outboard profile and deck arrangement plan for Nautilus, a 40-foot houseboat cruiser

Nautilus, an Easily Built Cruising Houseboat

A Complete Design for a 40-Foot Tunnel Stern Motor Houseboat With Specifications and All Essential Details

Designed by Wm. J. Deed

Exclusively for MoToR BoatinG

WE are endeavoring in this series by Mr. Deed to give every reader of MoToR BoatinG a boat of his pet type; open launches, shoal draft cruisers, auxiliaries, orthodox cruisers, etc., are each in demand by certain people in their locality and for their particular use. By presenting designs which cover the field pretty well we feel that we are offering our readers big opportunities to obtain just what they require. This month we offer a craft giving maximum comfort at reasonable expense. She is not an out and out scow houseboat nor a V-bottom shoal draft cruiser, but a combination of the two.

We believe that such a floating home will afford the comfort of a houseboat and the mobility of the motor boat in a degree not afforded by any in our series so far, and Nautilus is worth looking into if the landlord has given you notice or you can't find a cottage at the shore for less than the amount of a king's ransom. Nautilus will afford a home with the added advantage that when you don't like your neighbors you can move. But seriously, more and more are looking to such a craft for real honest-to-goodness boating when the conditions for use are right. We don't recommend Nautilus for coastwise work or deep water cruising, but if the surface of the water in your locality is very close to the bottom or the waters are deep but more or less sheltered or you want to be able to cruise through the beautiful canals, lakes, and rivers, then look into this craft.

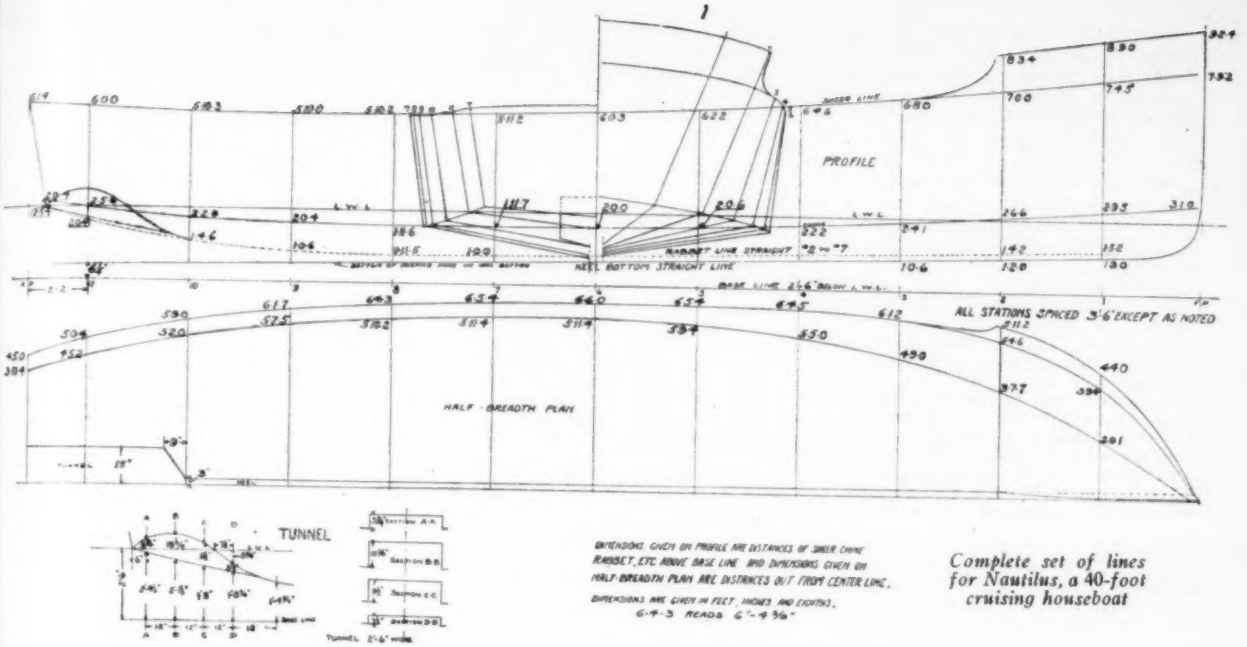
The medium powered houseboat is growing in popularity by leaps and bounds.

Nautilus, the sixth of the present series of motor boats designed for MoToR BoatinG by William J. Deed, promises to be one of the most popular of the entire series.

This little ship is in size and general arrangement right for cruising, living aboard and all-around comfort. She is sufficiently large to provide excellent cabin and deck space and also small enough to be readily handled under power by one man.

We believe that builders of this boat will find that they have secured a maximum of comfort with a minimum of outlay.—EDITOR.

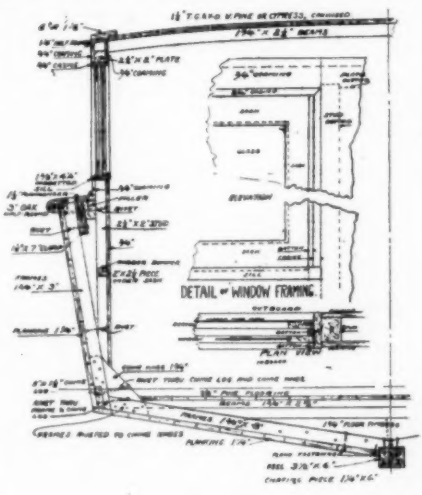
Her draft has been held to two feet and a tunnel stern provided to enable her to swing a large propeller on light draft. The form is simple and easy to build, which reduces cost whether built at home in the back yard, or by a professional builder. All the frames are straight shapes, no curves, and simplicity of detail for all parts has also been aimed at. She is sharp enough forward to make lying at mooring on a choppy day as comfortable as can be and to reduce pounding and discomfort when being driven against a head wind and sea. Yet the breadth is liberal and provides good stability. The motor is way aft both for rea-

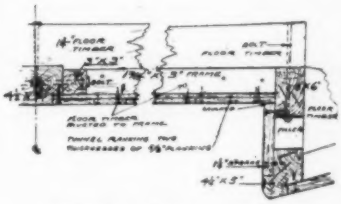

PROFILE
HALF-BREADTH PLAN
ALL STATIONS SPACED 3'-6" EXCEPT AS NOTED
TUNNEL
DIMENSIONS GIVEN ON PROFILE ARE DISTANCES OF SHEER CHINE RABBET, ETC ABOVE BASE LINE AND DIMENSIONS GIVEN ON HALF-BREADTH PLAN ARE DISTANCES OUT FROM CENTER LINE.
DIMENSIONS ARE GIVEN IN FEET, INCHES AND EIGHTHS.
6-9-3 READS 6'-9 3/8"

Complete set of lines for Nautilus, a 40-foot cruising houseboat

sons of accommodation plan requirements and also to reduce cost by eliminating a long shaft and bearings. No crew is provided; this is a floating home for folks of moderate means; not a millionaire's yacht. We didn't try to make a beauty. We drew the accommodation plan, inked it in first, then drew the profile to suit, so that we got the convenience and comfort first and then tried to make her look like a boat. But you won't be ashamed of her appearance. When the fellow across the cove comes out of his two by twice stateroom onto his only slightly larger deck to stretch and get the kinks out of his anatomy you will be having a tennis match on the roof or lolling in your pet easy chair in the living room. And the galley is larger than the average apartment kitchenette and as convenient and equipped for real use. You can stow supplies enough for a month of living on board without interfering with anything else or having to get them out of some out of the way locker by standing on your head while doing it.

A family of four can live aboard very comfortably. The living room is 10 feet 9 inches by 11 feet and by providing a Pullman berth on the starboard side maximum floor space is obtained. On the port side is a wide extension transom with dining table arranged in front of same. The table and chairs may be moved about to suit; to save space, easy chairs may be used at the table as well as regular dining chairs. A writing desk with bookcase cover, a Victrola, sideboard, and closet and shelves add to the convenience of this room. Five large windows will light it and keep it cool. With the companionway doors open at each end of the house and the doors open between the rooms, a good circulation of air will be had. The bath room is planned conveniently to be entered direct from either stateroom or living room. A large bath tub with shower over and rubber curtains surrounding the tub is provided. The stateroom might have been planned with brass bed, but as the built-in berths are fitted with upholstered springs and provide a comfortable bed and also affords valuable storage space, the built-in berths were selected. A full length mirror is shown on the stateroom door and a dresser and chair are provided. In addition to the stateroom closet there are two under the upper deck stairway, and a large wardrobe in the lobby. At the foot of the stairway, conveniently located in case you see a flock of ducks, is a gun rack. The average headroom of about 7 feet throughout is exceptional but affords comfort on hot days and is necessary on a houseboat. The upper deck or roof is nearly clear of obstructions and with a khaki weather cloth, side curtains and awning to protect it from the sun, one would find it a fine place to spend a hot day. Flower boxes, wicker chairs and table can be placed about and all the delights of a bungalow enjoyed. Seats with gravity fresh water and fuel tanks and locker for stowing the various items of equipment used about deck are provided. In view of the fact that motive power and travelling about is of secondary importance, the engine is low in power and the fuel supply moderate. Additional tanks can, of course, be arranged if desired.





Structural details of hull and section at tunnel

With the small fresh water supply shown, the bath tub and shower must be supplied from outboard, and as eight out of every ten who would use Nautilus would anchor in water clear of oil and dirt and would probably swim and bathe in the surrounding water, we have arranged to supply water from that the boat floats in by pumping through a rotary pump with piping arranged to supply either tub or shower, and water may be heated to supply the bath. Of course, if one wanted to rearrange the galley and install a larger range with a hot water back, they would obtain a supply of hot water and tanks could be fitted under the deck forward to increase fresh water supply.

In building Nautilus no special problems will come up except in the amount of joiner work, but if you want to dodge that, measure up the space and buy furniture at the store to fit. We have shown some details and believe that anyone capable of building the hull of Nautilus will have little to puzzle out in the line of joiner work. We shall, however, be glad to be of all assistance possible.

Arrangements have been made whereby those desiring full scale blue prints of the drawings for any of the boats in this series can secure them at nominal cost by addressing F. W. Horenburger, 63 West 184th Street, New York, N. Y.

SPECIFICATIONS FOR BUILDING NAUTILUS, A CRUISING HOUSEBOAT

In General: The completed boat built to the following specifications and in accordance with the accompanying plans shall measure:

Length over all, 40 feet 8 inches; breadth, 13 feet; draft, 2 feet.

The boat is to be built under cover protected from wind and weather and is to be fully insured at all times until completion. All material is to be of best commercial quality free of damaging knots, checks, dry rot, etc. No kiln-dried lumber to be used. All galvanized hardware to be of the best hot-dipped quality.

Hull

Keel: To be of white oak or yellow pine sided 6 inches, molded 3½ inches, with 1¼ x 6-inch white oak chafing strip screwed to under side. At aft end keel to be molded as per plan and to be extended to take heel of strut and rudder. Upper side to be tapered in way of opening aft of Station No. 10.

Stem and Apron: To be white oak sided 5 inches, molded as per plan, to be reinforced by oak apron riveted to keel and to stem by 1-inch diameter galvanized iron rivets, four in each. Stem to be beveled to face 1 inch and be bound by brass half-round. White pine stopwater to be driven at each seam crossing rabbet.

Strut: To be sided 5½ inches at shaft center, tapered above and below and well fastened to horn timber and keel. To be fitted with lignum-vitae bearing of necessary diameter.

Horn Timber: To be of white oak or yellow pine sided 6 inches, molded 4½ inches, reinforced in way of rudder port by 3 x 3-inch pieces, each side bolted in place. Horn timber fastened to shaft log by ½-inch galvanized rivets.

Snaft Log: To be white oak or yellow pine 6 x 8 inches, fastened to keel by four ½-inch galvanized rivets.

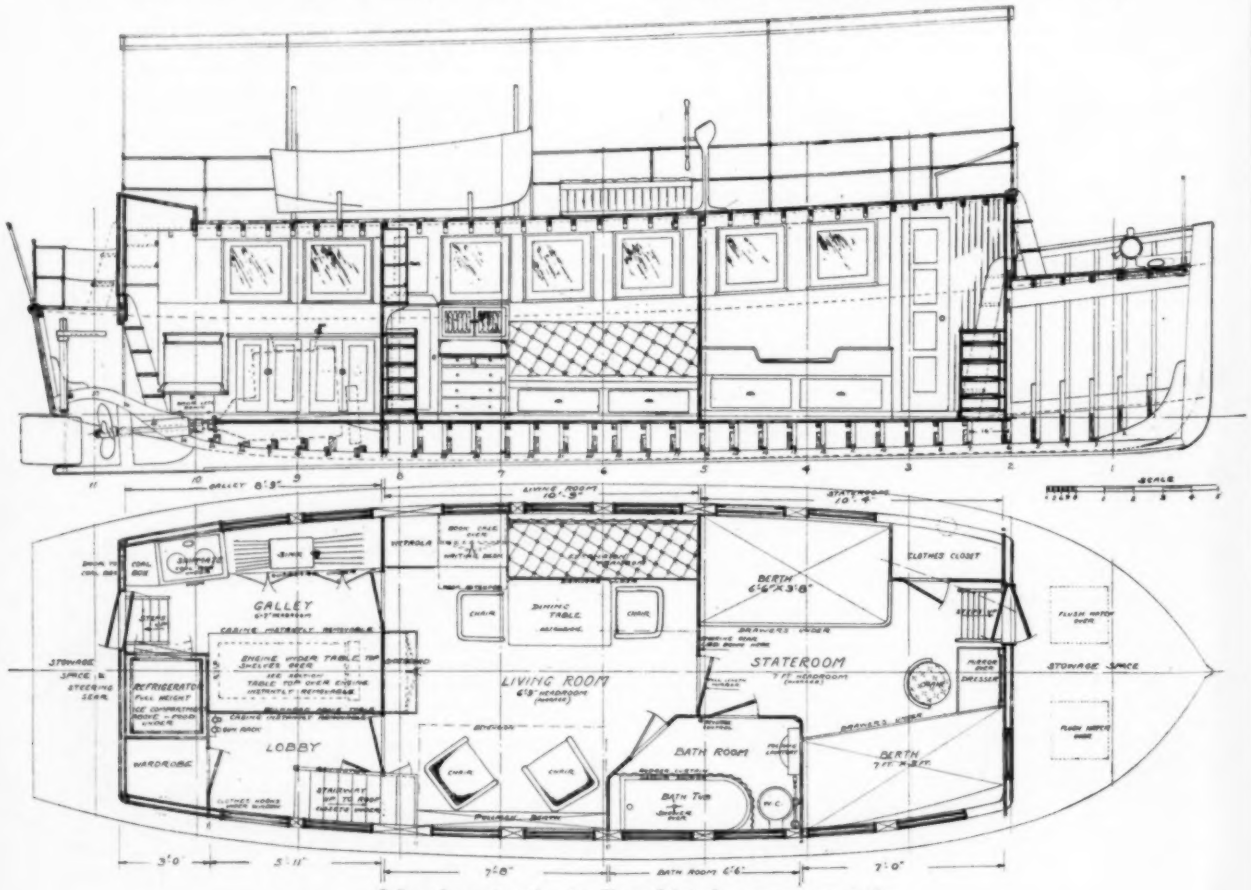
Transom: Framing around edges, across top, and vertically at center and at quarter breadth each side to be white oak 2 x 3 inches. Transom planking to be two thicknesses of ⅞-inch white oak brass-screw fastened to framing, seams of outer strakes to come in the middle of inner strakes. To be caulked, puttied and finished smooth. Heads of fastenings countersunk and plugged. Across top mahogany or oak 1½-inch half-round to be fastened. Framing at quarter breadth to be reinforced at bottom by 1½-inch oak knee.

Frames: Both bottom and topside frames to be white oak or yellow pine 1¾ x 3-inch, spaced 12 inches on center. To be fitted over keel and fastened by two 3½-inch galvanized boat nails in each frame. At the chine topside frame to be fitted over chine log and bottom frame to be fitted over topside frame and rivet driven, as indicated, through chine log and frames. An oak chine knee 1¾ inches thick to be carefully fitted at chine and fastened to frames by long galvanized nails riveted.

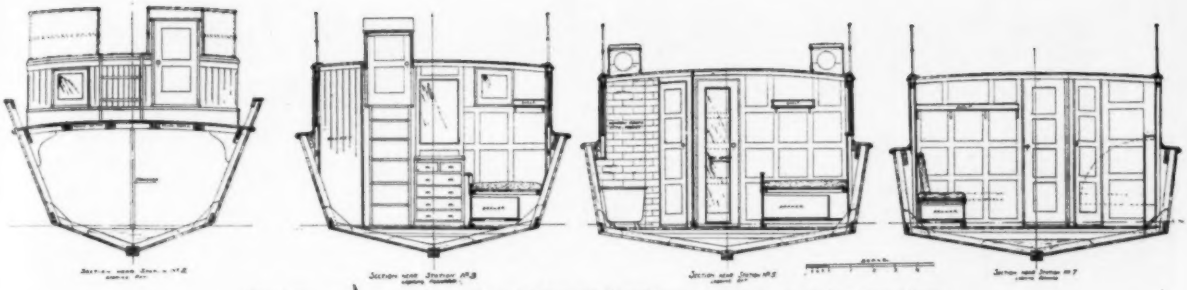
Planking: To be taken from 1¼-inch stock to finish at least 1⅛ inches. To be white cedar, cypress, fir or yellow pine laid in as long strakes as possible and in widths of about 5 inches. Each plank to be fastened to each frame by two galvanized chisel point boat nails, heads countersunk and plugged. Seams to be caulked with two threads of yacht cotton, payed with paint, and finished flush with white lead putty. Butts to be made with butt blocks in the usual way. In order to lower weight it is recommended to plank bottom with yellow pine and topsides with cypress or cedar. Garboard and hood ends to be fastened by long brass screws.

Floor Timbers: To be oak 1¾-inch, secured to keel by galvanized ½-inch drift bolt. To be riveted to each frame by galvanized iron nails. Limbers 1½ inches diameter to be cut each side for drainage.

Cabin Floor Beams and Flooring: Beams to be 1¾ x 2½-inch oak or yellow pine, every third beam supported by strut in center. Flooring to be ⅞-inch pine. For a space of two feet wide in the clear center of the floor boards shall be left loose for access to bilge. Flooring to be painted on under side.



Inboard construction profile and interior arrangement plan



Interior sections at forward stations of Nautilus, a 40-foot cruising houseboat

Clamp: To be yellow pine in not more than two lengths or Douglas fir in one length. To be 1½ x 7 inches, secured to each frame by galvanized rivet and each strut to be riveted to clamp. At bow clamp to be secured to stem by 2-inch oak breasthook and by 2-inch quarter knees at stern.

Chine Log: To be yellow pine or Douglas fir in not more than two lengths. To be 1½ x 5 inches, secured as above mentioned under frames.

Sheer Ribband: At sheer a 3-inch oak half-round shall be well fastened by long galvanized chisel point nails, heads countersunk and plugged.

Plankshеer: To be 1¼-inch white oak or mahogany fastened every 12 inches by three long brass screws, heads countersunk and plugged.

Tunnel: Side framing to be 4¼ x 5 inches, rabbetted to take tunnel side planking and hull bottom planking. To follow outline of tunnel shown on line drawing. To be fastened to keel and to transom framing. At top of tunnel side oak piece 3 x 6 inches to extend fore and aft and sawed to shape of tunnel as shown in elevation; to be fastened to lower side framing piece. At each frame a 1¾-inch oak floor timber to be fitted to extend from tunnel side outboard. Across top of tunnel 1¾ x 3-inch frame extending between 3 x 3-inch and 3 x 6-inch to be reinforced by 1¾-inch oak floor timber extending full width as shown. Tunnel planking one side to be 1¼-inch yellow pine strake and on top of tunnel planking to be two thicknesses of ⅝-inch planking, yellow pine, cypress, white cedar, etc., laid with thick coating of white lead between, seam on outer planking to come in middle of inner strakes, brass screw fastened, heads countersunk and plugged.

Forward and Aft Deck: Beams to be 1¾ x 3 inches, one at each frame, crowned 2½ inches. Deck to be 1⅛-inch white pine, finished bright. Covering board or plankshеer to be 1⅛ x 8 inches. Flush hatch to be framed out with 1¼ x 3-inch oak, edges of hatch to be bound with 1/16 x 1½-inch hard brass strip, screw fastened. Similar hatches in forward deck. Stanchion to support forward deck at frame No. 3.

Bulwark: Frames and planking forward of house to be carried up to height shown and to form bulwark. Clamp of yellow pine 1½ x 3 inches to tie heads of frames together. Cap of white oak or mahogany 1⅛ x 6 inches to be fitted.

House and Upper Deck: Studs of oak or yellow pine 2 x 2½ inches, to be riveted in place, one stud at each end of window and at other points spaced about 12 inches apart. On top of studs and fastened to same by ½-inch diameter galvanized iron drift bolt about 18 inches long shall be a 2 x 2½-inch plate of yellow pine. Inner and outer coamings of ¾-inch oak or mahogany to be screw-fastened. At base on outside ¾-inch oak or mahogany coaming to be fitted up to level of under side of sill. Window casing to be ¾-inch oak or mahogany with 1⅛-inch sill of oak or mahogany rabetted. Slot to be cut for sash to pass through. Oak or mahogany battens ¾ x ¾-inch to be fastened to casing by round-head brass screws to hold window sash and screen. Window to have ⅞-inch oak or mahogany sash glazed with ¼-inch plate glass set in rabbet and covered by quarter-round. Sash operated by Pullman sash balance; sash to drop into pocket below sill, pocket to be of metal and fitted with drain overboard. Except where in view inner staving to be ¾-inch tongued and grooved, and V'd cypress; where in view staving to be covered by denim and made into panels by ¼-inch oak or mahogany stiles and rails.

Roof or upper deck beams to be oak 1¾ x 2½ inches, spaced and crowned as per plan. Deck to be 1⅛-inch tongued, grooved and V'd cypress or white pine covered with 10-oz. canvas properly laid with thick coating of lead paint. Waterway to be oak or mahogany 1⅛ x 6 inches, screw-fastened in place, heads countersunk and plugged.

House ends same construction as sides.

Companionways: To be of 1⅛-inch oak or mahogany stiles and rails with ⅝-inch panels mounted on 1¼-inch oak or mahogany coaming bolted to deck frame. At corners 2 x 2-inch oak corner posts to be renewed to deck frame and companionway. Slides and doors to be fitted. Doors to be ⅞ inch with bronze hinges, lock sets, and hooks. Screen doors to be fitted to all doorways.

Companionway ladders to be of 1⅛-inch oak or mahogany with ¾-inch steps covered with rubber tread and fitted with brass nosing.

Railing and Awning: Galvanized pipe rail 28 inches high to be mounted as indicated, stanchions bolted through deck. Around forward end as indicated heavy khaki weather cloth to be laced through brass grommets. At points indicated ½-inch galvanized pipe frames to be fitted for awning. Awning to be stretched over ¾ x 3-inch slats riveted to frame.

Seats on Roof: Framing to be 1 x 1½-inch oak; top, ⅞-inch pine; staving, ⅜ x 2-inch tongued, grooved and V'd oak or mahogany, ⅜-inch facing pieces top and bottom. Cushions to be 3-inch box cushions filled with Kapoc, covered as desired.

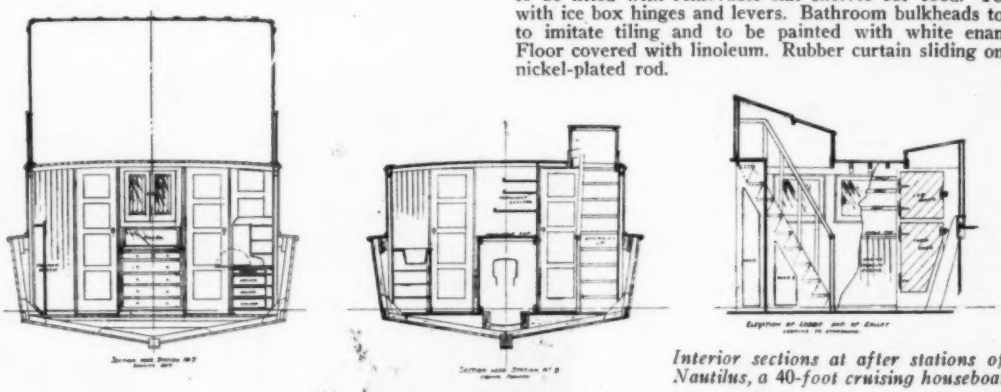
Bulkheads: To be ⅞-inch country pine made into panels by covering with denim and securing ¼-inch oak, cypress or mahogany stiles and rails.

Door Casings: To be ¾-inch oak or mahogany or cypress.

Joiner Work: Bookcase, writing desk, sideboard, transoms, dresser to be of oak, cypress or mahogany, ¾-inch stock, drawers ½-inch pine; hardware, bronze.

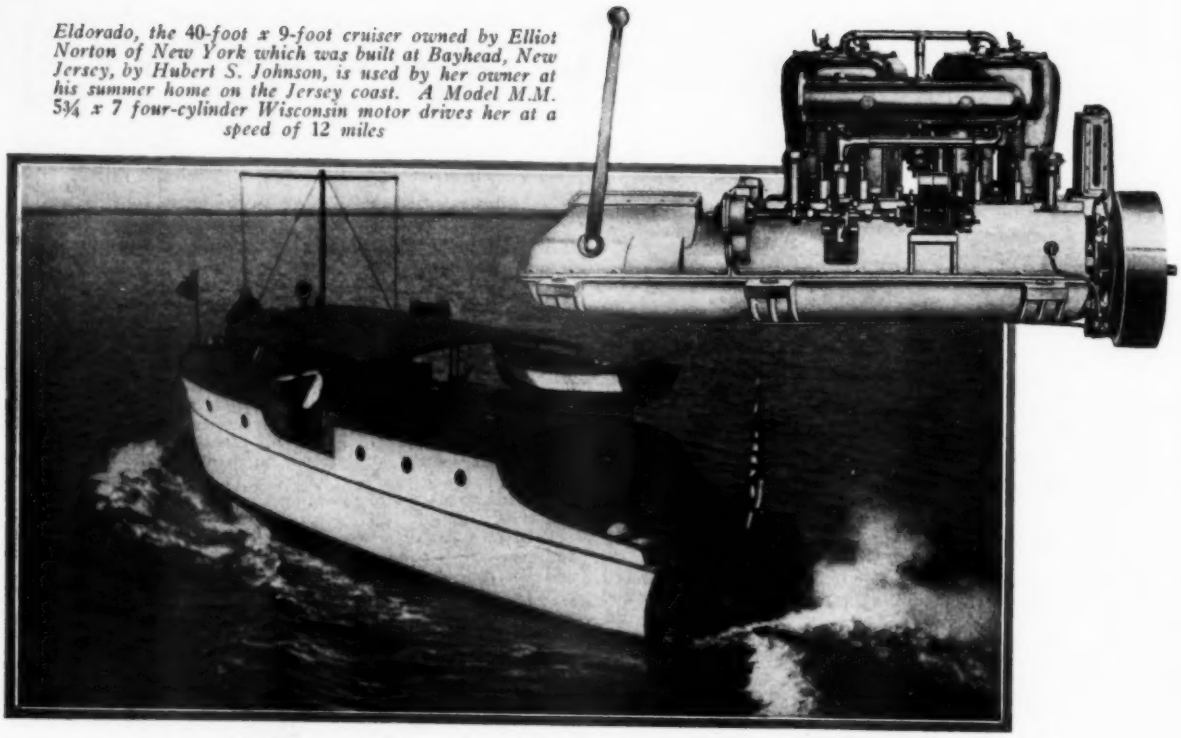
Engine casing ⅜ x 2-inch cypress staving cleated together so as to be removed by simply turning a button at each corner. Table top to be ⅞-inch oak. Bulkhead above table to be ⅞-inch tongued, grooved and V'd cypress.

Refrigerator to be constructed of two thicknesses of ⅞-inch cypress or poplar with 1½-inch insulation space between filled with granulated cork or other insulating material. Upper compartment to be for ice and to be fitted with metal pan drained overboard. To have grating to raise ice off bottom. Lower space to be fitted with removable slat shelves for food. To be fitted with ice box hinges and levers. Bathroom bulkheads to be made to imitate tiling and to be painted with white enamel paint. Floor covered with linoleum. Rubber curtain sliding on rings on nickel-plated rod.



Interior sections at after stations of Nautilus, a 40-foot cruising houseboat

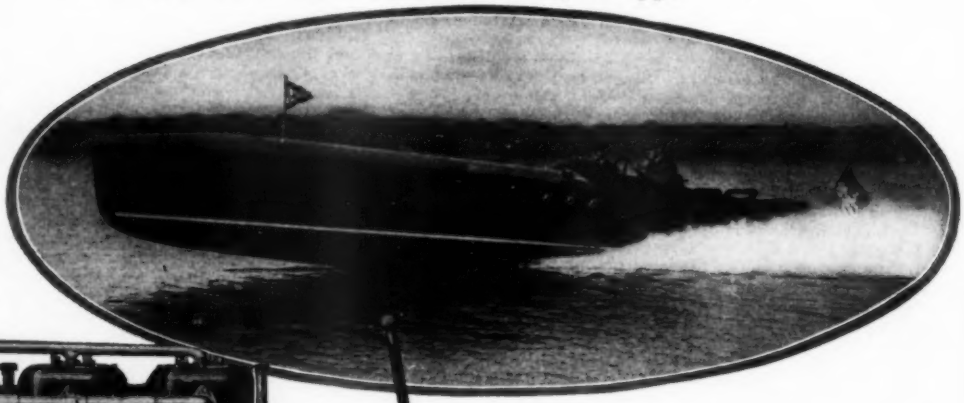
Eldorado, the 40-foot x 9-foot cruiser owned by Elliot Norton of New York which was built at Bayhead, New Jersey, by Hubert S. Johnson, is used by her owner at his summer home on the Jersey coast. A Model M.M. 5¾ x 7 four-cylinder Wisconsin motor drives her at a speed of 12 miles

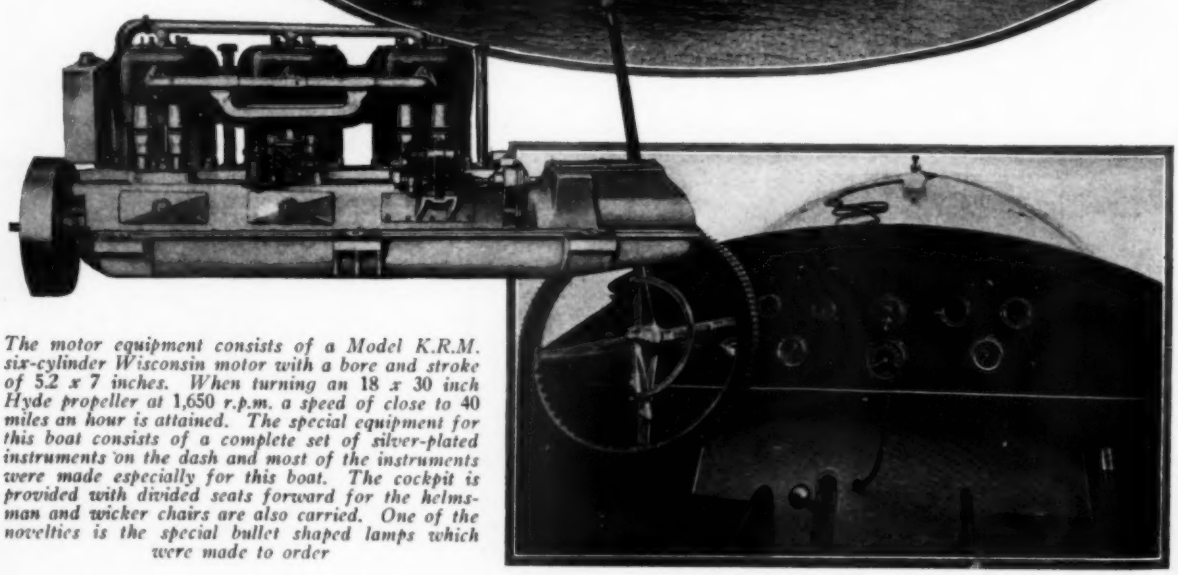


The Versatile Marine Motor

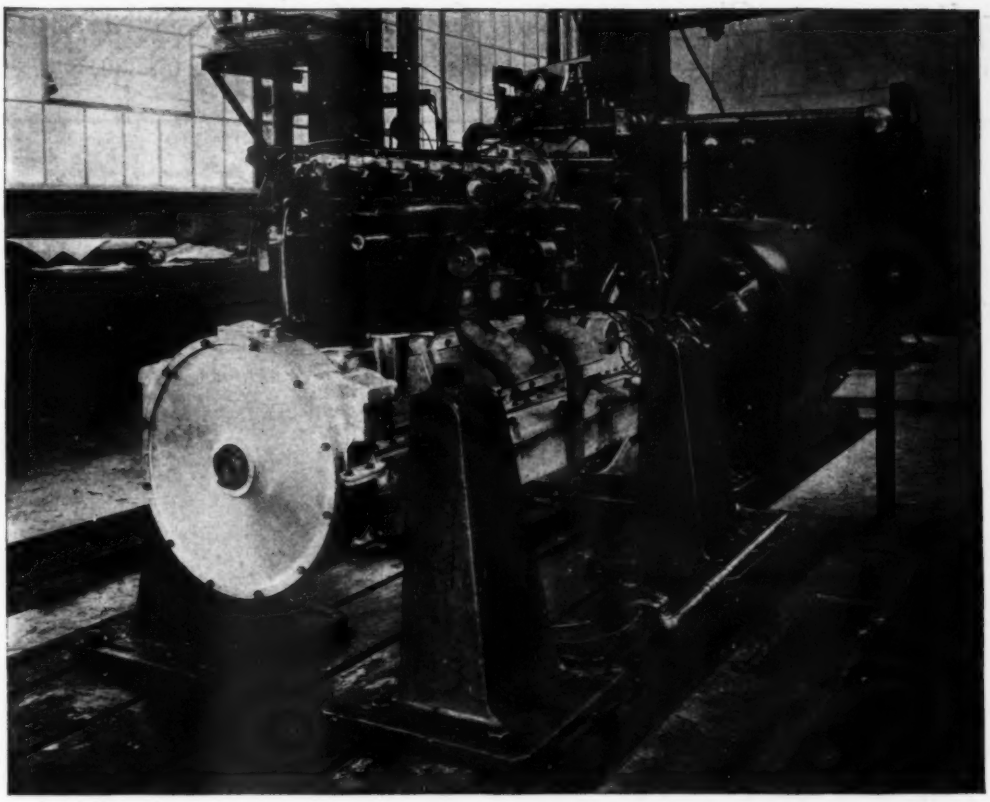
Adaptability of the Modern Marine Motor to the Propulsion of Boats Differing Widely in Type

Miss Consistency IV, the 32-foot mahogany runabout built by the builder of Eldorado for T. M. Fenner of New York. The mahogany used in the construction of this boat was all cut from the same tree with the result that it is an unusually fine job of matched work





The motor equipment consists of a Model K.R.M. six-cylinder Wisconsin motor with a bore and stroke of 5.2 x 7 inches. When turning an 18 x 30 inch Hyde propeller at 1,650 r.p.m. a speed of close to 40 miles an hour is attained. The special equipment for this boat consists of a complete set of silver-plated instruments on the dash and most of the instruments were made especially for this boat. The cockpit is provided with divided seats forward for the helmsman and wicker chairs are also carried. One of the novelties is the special bullet shaped lamps which were made to order



A Hall-Scott Marine Motor on the testing stand ready for a trial

What the Research Laboratory Has Done For the Marine Motor

Full Power Tests of All Motors Built Show Up Any Weakness or Faults Before the Motors Are Shipped

An electrical-dynamometer laboratory has been erected by the Hall-Scott Motor Car Company at its factory in Berkeley, California, equipped with apparatus and instruments at a cost of approximately $50,000. This laboratory is used to make investigations and experiments for the development and refinement of the Hall-Scott marine and aviation engines. At the time of completion it contained the largest electrical-dynamometer west of Cleveland and the only laboratory of its kind on the Pacific Coast.

The electric dynamometer is used for testing internal combustion engines such as are used in motor boats, automobiles, trucks, airplanes and tractors. It is primarily an absorption brake for measuring the horsepower delivered by an engine, but has also many other applications and is equally able to measure the torque delivered, which with the speed gives the brake horsepower. It affords a simple means of measuring friction losses and thus the mechanical efficiency of an engine. Horsepower is the product of torque in foot-pounds and speed in revolutions per minute multiplied by a constant. The electric dynamometer measures the horsepower of an engine by indicating on a scale the torque delivered by the engine shaft while a tachometer on the shaft indicates the speed.

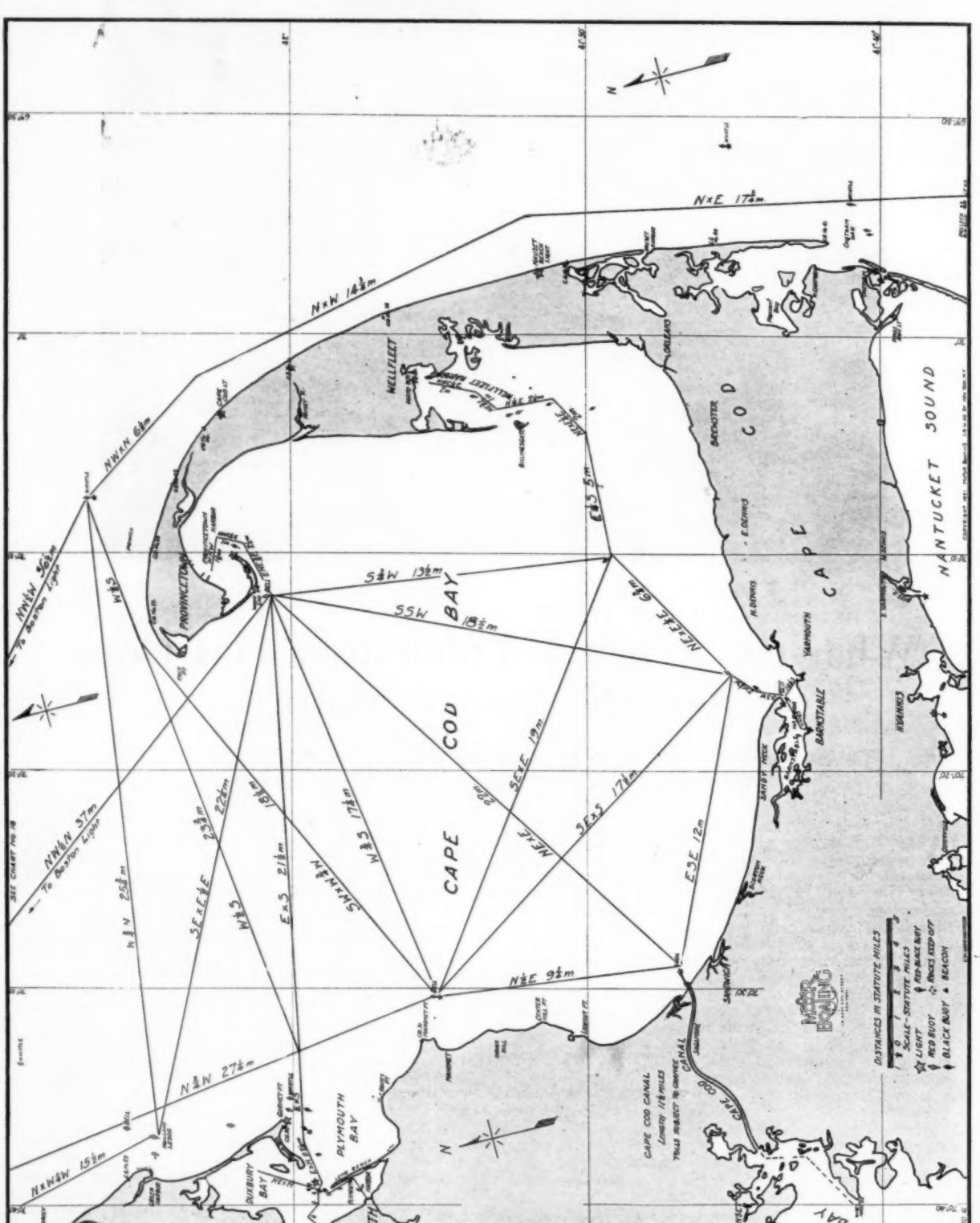
Horsepower tests are useful in the study of nearly every part of an engine. The effects and value of carburetion is shown by the results it produces in power per unit of fuel consumption and the power-output of the engine at different speeds. The efficiency of an ignition system can be determined by power tests at varying speeds and load. Power tests will also show the efficiency of intake-manifold design, the effects of different kinds of exhaust manifolds and mufflers, the results of elimination of vibration by balancing the reciprocating elements of the engine, and the difference between various types of piston construction, materials, and piston-rings.

Of great importance also is the testing of various lubricating oils by studying the relative values under known conditions of speed and load. Another fruitful field for investigation is the effect of different compression pressures and temperatures in connection with different kinds and proportions of fuel. In fact, practically all the characteristics of an engine can be investigated, noted, and recorded for future reference, such as: revolutions per minute, and torque, brake mean effective pressure, friction horsepower, indicated horsepower, mechanical efficiency, thermal and volumetric efficiency, inlet jacket temperatures, outlet water temperatures, consumption of fuel, etc., etc.

The field for investigation and experiments is unlimited. Of course it must be understood that the value of the results will be proportional to the understanding of the phenomena observed and the application of the knowledge gained, correlated in such a way as to be useful for a particular problem. By making observations, compiling accurate data, and correlating the results, a great many valuable determinations can be made that would otherwise be secured only by arbitrary experimentation, which would of course relegate the science back into the field of empiricism.

Motor Boatmen's Chart No. 20—Cape Cod Bay, Massachusetts

Use in Connection With Coast & Geodetic Survey Charts Nos. 1208, 245, 339, 340, & 341



Racing Program for 1921 Promises Action

Tremendous Activity in Racing Circles Throughout the Country Presages a Season of Unusual Interest to the Followers of Speed Craft

IT was necessary to call a conference of all the racing enthusiasts in the vicinity of New York recently, in order to apportion the summer's available supply of week-ends equitably among the clubs planning to conduct motor boat races. This was held at the New York Athletic Club and was attended by representatives of the racing committees of practically all clubs in the vicinity. The New York Athletic Club, taking the initiative, announced the dates for the famous Block Island race which is to be held this year on July 9th and the Cruiser Championship Race on August 6th. Delegates from the Philadelphia clubs which hope to carry this trophy back with them next summer were present and agreed to the conditions. The Navigation Race by this club is planned for September 3d and will as usual take the form of a run over any one of a variety of courses to Lloyd's Harbor.

RACING DATES FOR 1921

June 11	Columbia Yacht Club, New York, Open Races, all classes.
June 24, 25	Yachtsmen's Club, Philadelphia, Essington to Atlantic City.
July 1, 2, 4	Mississippi Valley, Annual Regatta, Peoria, Illinois.
July 9	New York Athletic Club, Cruiser Race to Block Island.
July 14, 15, 16	Open Regatta for motor boats, all classes, Baltimore, Maryland.
July 16	New York Motor Boat Club, Race to Newburgh and return.
July 22, 23, 24	Milwaukee, Wisconsin, Motor Boat Races.
July 23	Bridesburg - Columbia Yacht Clubs, Cruiser Race, Bridesburg to Reedy Island and return.
July 30	Colonial Yacht Club, New York, Cruiser Race to Poughkeepsie and return.
Aug. 4, 5, 6, 7	Pageant of Progress Races, Chicago, Ill., all classes.
Aug. 6	New York Athletic Club, Cruiser Championship Race to Shelter Island.
Aug. 11	New York Motor Boat Club, Kieger Trophy Race.
Aug. 11, 12, 13	Fisher Trophy Races at Buffalo, N. Y.
Aug. 13	New Rochelle Yacht Club, Cruiser Race to Stratford Shoal and return.
Aug. 17, 18, 19	Thousand Islands Challenge Cup Races on the St. Lawrence River.
Aug. 20	Orienta Yacht Club, water sports at Lloyd's Harbor, New York.
Aug. 20	Colonial Yacht Club, New York, Cruiser Race to Cornfield Reef Light.
Aug. 27	Harlem Yacht Club, City Island, open races, all classes.
Aug. 27, 29, 30	The Gold Cup, One Mile Championship, and Wood-Fisher Trophy Races at Detroit.
Sept. 3	New York Athletic Club, Navigation Race.
Sept. 5	Wilmington M. B. Club Record Cruiser Trophy Race.
Sept. 3, 5, 6	Races for the British International Trophy at Detroit.
Sept. 5, 6, 7	Motor Boat Races at Toronto.
Sept. 10	Hudson River Yacht Club, New York, Open Races, all classes.
Sept. 10	Philadelphia Y. C., Essington to Reedy Island and return.
Sept. 18	Tamaqua Yacht Club, Ocean Cruiser Race.

Method to Be Used

For all of these events and practically every other long distance cruising race to be conducted in this vicinity during the coming summer it has been agreed to use the new condition in the American Power-Boat rules which provide that an observer shall take the actual revolutions of the motor at frequent intervals during the race. This method, known as method D, will be fully explained in the new addition of the American Power-Boat Association Year Book which is now being printed. The particular advantage of using this method of determining the revolutions of the motor during the progress of a race is that the handicap is based on the performance of a motor in the race. While a motor may be able at times to exceed its normal rate the maximum average which will be selected as a basis for the computation of the rating will result in a much more correct result than the previous methods. The result of a season's trial of this method of determining the rating will undoubtedly provide much valuable data from which further studies of the racing rules can be made.

Big Race at Philadelphia

For June 24 and 25 the Yachtsmen's Club of Philadelphia, with the aid of the Philadelphia Yacht Club and the Lulu Temple Yacht Club of Atlantic City, are arranging to run the famous race from Philadelphia to Atlantic City. This race is to start from the clubhouse of the Philadelphia Yacht Club at Tinicum and finish at the clubhouse of the Lulu Temple Yacht Club at Atlantic City. On the same day a long-distance race of the Riverside Yacht Club on the lower Delaware River will be held. It was found impossible to change the dates of these two events to avoid interference. It was the personal offer of a handsome trophy by Commodore Jolley, in addition to another offered by the club, which clinched the agreement between the Yachtsmen's Club and the Lulus. Various other prizes, including something for every boat finishing, are also being donated by the seaside club, while the Yachtsmen's club is offering a large batch of trophies.

Primary credit is doubtless due to Dr. Eugene Swayne, who is chairman of the committee. He has just launched his cruiser Eugenia, which he proposes to have in the race. He has been ably assisted by that other venerable "Doc" of the Delaware, Dr. C. S. Street. The course has not yet been accurately measured, but will be about 120 nautical miles. No restrictions will be made on the course. Boats will race in three classes and will merely be required to start at the Philadelphia Club and finish at the stake-boat at Atlantic City. The Committee has remarked that thirty starters would not be too high an estimate of the probable contestants.

Many Local Events

The Columbia Yacht Club, New York, will hold again its usual Spring Opening Races on June 11th, at which it is expected many of the new boats on the Hudson River will be able to compete for the first time. The old favorites, Eastern Star and Amorita, are already looking forward to these races. The New York Motor Boat Club is preparing to conduct a long distance race to Newburgh and return on July 16th and 17th. The plan is to handicap the boats on the actual performance as established on half of the journey. For the return trip the boats will be started on their handicapped times and all should finish very closely together. The Newburgh Bay Yacht Club expect to entertain the visitors during their overnight stay at Newburgh.

Chicago Has Big Plans

Chicago is planning to come back strong into the motor boat racing game with the Pageant of Progress Exposition races during the first week in August. Commodore Sheldon Clark has planned an elaborate program and says there is no location in America where motor boat racing has a better chance than in Chicago, especially as the city authorities from the Mayor on down the line are so enthusiastically behind the project. It is proposed by the city to hold this great event every year for a number of years and preparations are being made to this end. The course over which the boats will race is protected at all sides and the two and a half mile circuit is overlooked by the great pier which is more than half a mile long and whose several decks can accommodate several hundred thousand persons. They will have a fine array of prizes and practically every kind of boating event that can be held in addition to the regular class contests.

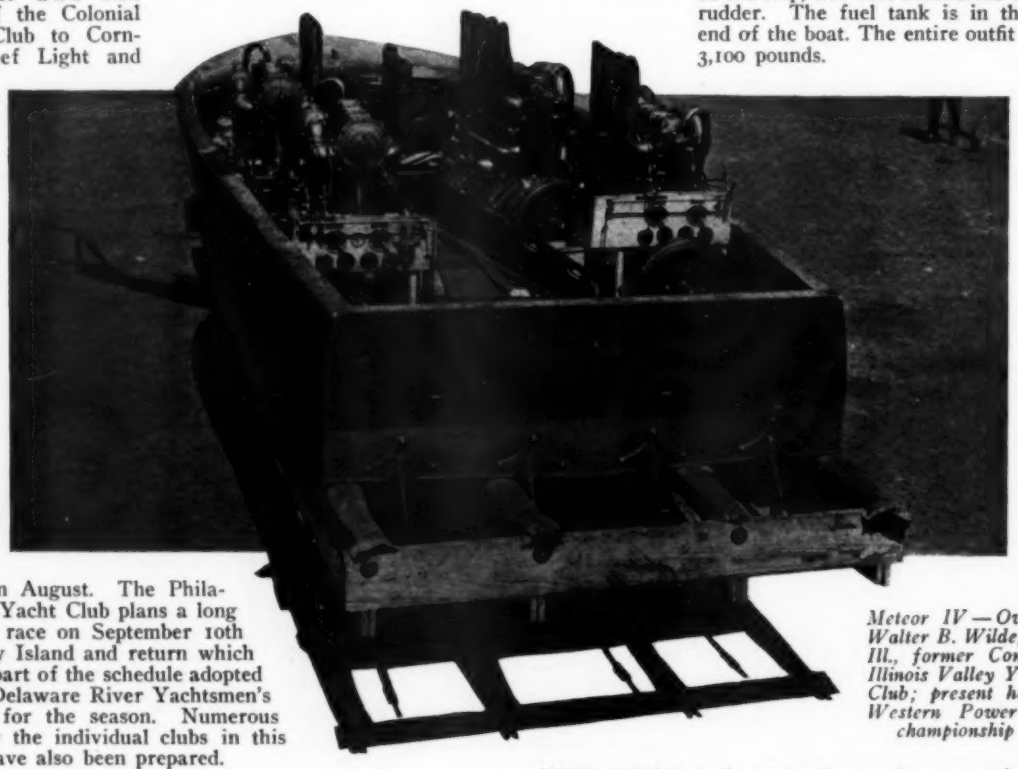
Baltimore is also planning to be represented in the season's racing activities. W. B. Staley is arranging an elaborate program of races and water sports to be held from July 14 to 16. Numerous racing enthusiasts have promised to be present at this regatta.

Fisher Trophy Race at Buffalo

The circuit which is to include the Fisher Trophy Races at Buffalo, the Thousand Island Challenge Cup Races on the St. Lawrence River and the Gold Cup, One-mile Championship and Wood-Fisher Trophy Races at Detroit followed by the big race for the British International Trophy and the races at Toronto in September promises to keep all the followers of high-speed motor boat racing on their toes for a long time. With the several new speed boats which are known to be under construction for these different events world's records will be smashed repeatedly and the Racing Commission of the American Power-Boat Association will be kept busy keeping track of the records as fast as they are made.

Races in the Late Summer

There will be in addition to all these, numerous other races, among which can be mentioned the Race to Stratford Shoal conducted by the New Rochelle Yacht Club, the Annual Ocean Race of the Tamaqua Yacht Club in September and the Race of the Colonial Yacht Club to Cornfield Reef Light and return in August. The Philadelphia Yacht Club plans a long distance race on September 10th to Reedy Island and return which will be part of the schedule adopted by the Delaware River Yachtsmen's League for the season. Numerous races by the individual clubs in this group have also been prepared.



Meteor IV — Owned by Walter B. Wilde, Peoria, Ill., former Commodore Illinois Valley Y. and C. Club; present holder of Western Power Boat championship title

New Speed Boat for Peoria

A new boat, Meteor IV, has recently been completed by Walter D. Wilde of Peoria, Illinois, with which he hopes to establish new records at the big regatta of the Mississippi Valley Power Boat Association. The description of the boat which follows will prove interesting.

Hull—21 feet six inches over all; beam 6 feet six inches. A one step hydroplane designed and built by Finley Bailey of Peoria, Illinois, incorporating original ideas supplied by Mr. Wilde. It has a marked similarity to the Smith hulls but is shallower forward with a bow well cut away.

It is built of spruce, with a white pine bottom. Is reinforced with four parallel upright engine timbers, 12 x 1⅛ inch planking, bow to stern, eighteen apart, giving unusual rigidness. Its ribs are on eight inch centers. The hull weighs six hundred pounds and is finished in red with green deckings and brass combings.

The power plant includes four Hall-Scott four-cylinder 5¼ by 7 in. motors. Each of these four motors is installed separately, forms a separate unit and drives one of the quartet of propellers. Water is supplied the cooling system by double intakes, arranged so that should one intake clog the other will supply abundant water. Each motor has two high tension magnetos and one Miller Carbureter. Their installation has been staggered, so as to permit each motor to be as close to the side of the hull as possible, allowing a gangway of 24 inches through the center of the boat. They drive with universal joints, using tubing to the aluminum, gear boxes which are well forward under the forward deck. In the gear box the ratio of speed is increased one to two. Just back of the gear boxes, on the propeller shafts, are located the Joe's clutches. The shafts are of chrome nickel steel. The maximum speed of the motors is 1400 R.P.M. and it is expected to turn the 4 fifteen-inch 26-inch pitch three-bladed propellers 2800 R.P.M. Two of these propellers will run towards the right, two towards the left. The gear boxes, clutch bearings and thrust bearings are all ball bearing.

The driver's seat is forward of the four motors, the mechanician's in the stern. There is a dual system of control, worked out by Mr. Wilde. By this system of friction levers and stops either the driver or the mechanician or both can control the craft. This driving seat is just ahead of the step, five feet behind the forward rudder. The fuel tank is in the after end of the boat. The entire outfit weighs 3,100 pounds.

Wilde took his craft out on the rough waters of the Illinois last week for her first trial. What the result was Wilde is telling nobody save his immediate friends, but it is understood that the mark she registered was the cause of a big chuckle of satisfaction.

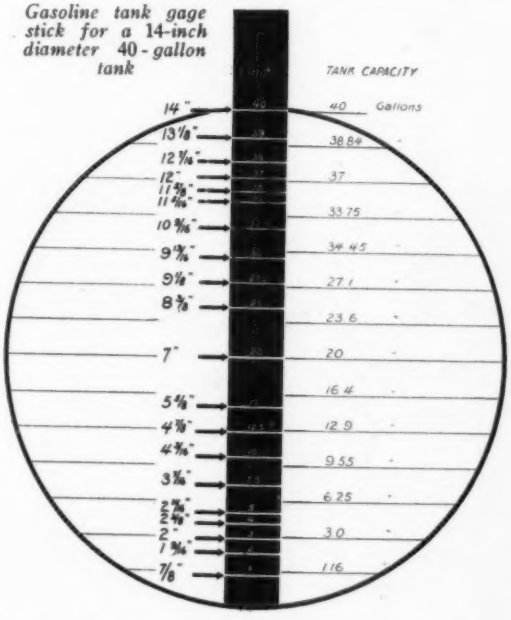
From present indications the big race meet at Peoria on July 1st promises to be one of the most successful ever conducted. A large entry list is promised and thirty-five boats have already signified their intention of competing. Twenty-one of these are owned by Peorians who will struggle bravely to retain the titles and prizes in the various events at home. Classes are provided according to cylinder displacement for boats with 104 cubic inches to the large class of 1,300 cubic inches. The free-for-all class will admit Meteor IV and Edsel Ford's new 24-cylinder outfit. F. G. Erickson, Toronto, Canada, millionaire boat owner and speed boat enthusiast, will hop from his home in Canada in one of his new hydroplanes for the Fourth of July races to be held at Peoria. As the owner of the celebrated Miss Toronto, the speed-boat which won the Webb trophy at the Mississippi River Valley Power Boat Association Regatta held in Burlington, Iowa, last summer, Erickson's presence at the Peoria races is imperative. To retain the western championship. (*Continued on page* 58)

The Way We Would Do It

Conducted by F. W. Horenburger and A. E. Snyder

EVERY month MoToR BoatinG's staff of experts answers thousands of inquiries about boats, engines, accessories and, in fact, everything marine. There is hardly a branch of the sport or industry on which they are not constantly being asked to give their opinions. They are very glad to do this, as well as to be of whatever service they can to MoToR BoatinG's subscribers and readers.

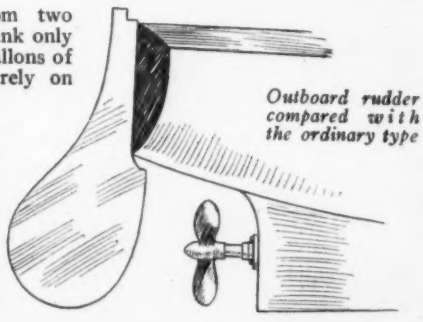
Quite naturally, many requests for information are received on subjects which are not of universal interest to every motor boatman. This, as well as the fact that it would be a physical impossibility to print answers to all questions received, makes it necessary for us to follow the rule of only printing answers to the few most important and interesting questions. However, we always give a reply by mail, so if you are perplexed about any questions pertaining to boating, don't hesitate to write to "The Way We Would Do It" Editor.



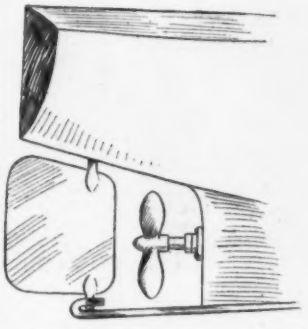
Gasoline tank gage stick for a 14-inch diameter 40-gallon tank

HAVING recently purchased a fast cruiser I would like to know how I can determine how much gasoline the motor uses. It seems to use a terrible quantity and there is no way of telling how much is being used. There are two round tanks, fourteen inches diameter and 6 feet long, supposed to contain forty gallons each. Is there any kind of a gage which is made for determining how much fuel is in a tank at any time? M.R., New York, N. Y.

The tanks in your boat are apparently standard 40-gallon tanks and owing to the cylindrical shape the volume changes continually. We have computed the volume for you and if you will make a gage stick to the dimensions shown on the drawing above you will have no difficulty in checking your fuel consumption very closely. The gage stick should be a smooth piece of wood painted a flat black. When put into the gasoline tank a distinct line will show the depth of fuel. You will observe that the bottom two inches of the tank only contain three gallons of fuel. If you rely on the fact that you still have two inches of fuel in the tank and expect to get any distance on this amount remember it is only three gallons and good for a half an hour or less. The figures given will apply only to this particular size of tank. Any other tank of the same diameter will hold a proportionate amount, depending upon its length, as the volume per foot of tank will be one-sixth of the volume shown here.



Outboard rudder compared with the ordinary type

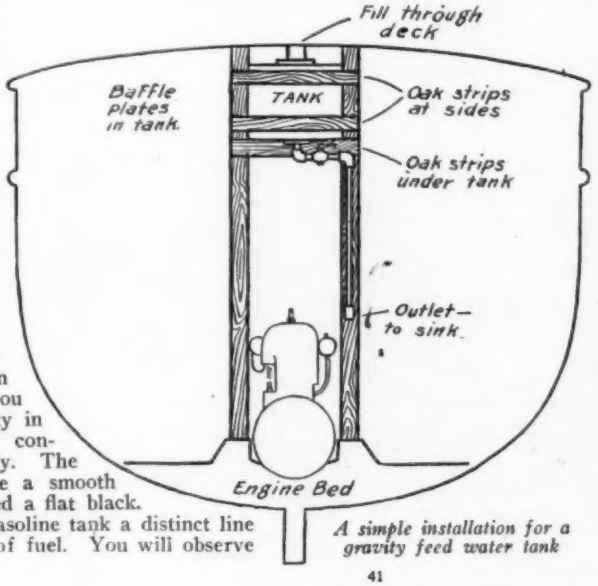


* * *

We are rebuilding our 24-foot runabout and have to replace the rudder. There is a doubt in our minds whether the outboard or the ordinary underneath type will be best for us. Can you offer any suggestions on this question in your Way We Would Do It Department and explain the advantage of one over the other? C.L.B., Newport, R. I.

Each of the types of rudders to which you refer have certain advantages. The outboard rudder is perhaps becoming more popular on account of its accessibility and freedom from trouble. The freedom with which the rudder may be unshipped, repaired or replaced is strongly in its favor. The stronger support along the transom is also an advantage. The location being further aft helps in the turning effort and also permits the propeller to be placed further aft, reducing the shaft inclination slightly. The only disadvantage is its liability to damage when maneouvering the boat in close quarters and going astern. The other type underneath the boat has its stock run up through a pipe which can be made as strong as necessary but also affords a place for leakage to begin. It is protected from injury and, being out of sight,

(*Continued on page 56*)

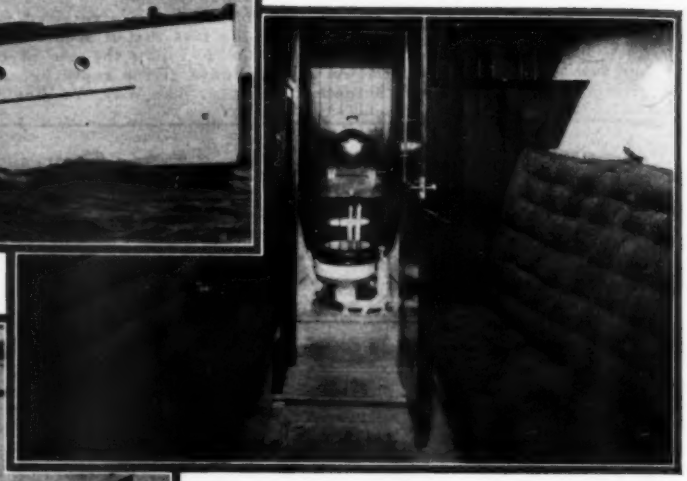


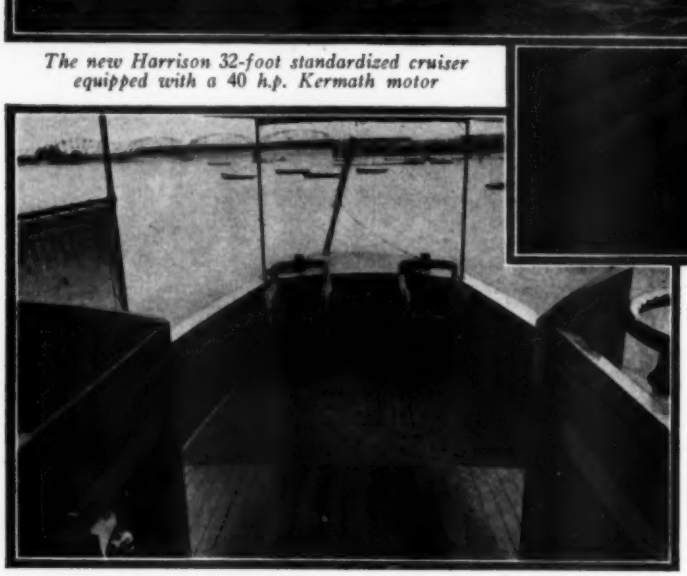
A simple installation for a gravity feed water tank

Yard and Shop

Notes of Interest to Both Owner and Manufacturer

The new Harrison 32-foot standardized cruiser equipped with a 40 h.p. Kermath motor





The latest in stock cruisers is the 32-footer built by the R. W. Harrison Boat Works in Toledo. This little boat is exceptionally roomy and as can be seen from these illustrations is provided with all comforts. Nothing has been sacrificed in the construction. Seaworthiness, ease of handling and speed are only a few of its good points. For power equipment this particular boat uses a 40 h.p. Kermath which turns a 20 x 20 inch Columbian bronze propeller at about 1,000 r.p.m. The choice of motor rests with the purchaser and the J.V.B. or the more powerful Van Blerck or Hall-Scott motors can be installed with equal facility

Active in Yachting

One floor of a large building devoted to outfitting men is used exclusively for apparel for the yachtsman, his officers and for his crew. From dungarees to dress uniforms, from boots to dress shoes, from watch cap to dress cap, everything is found here for outfitting the sailor or yachtsman.

The firm of B. Schellenberg & Sons have long been known to the yachting fraternity. A few of the yachts whose crews they have outfitted are: Felicia, Sachem, Saelmo, Remlick, Crusader II, Flying Cloud, Invader, Claribel, Penguin, Edithia, Hibiscus, Asor II. They have also acted as outfitters for the Seawanhaka-Corinthian and for the New York Yacht Club.

Clubs, yachtsmen and owners of commercial boats are invited to take advantage of the various services this firm offers them, not the least being the furnishing of individuals for a complete crew without any charge whatsoever to the clients.

A World Wide Reputation

One of the oldest manufacturers of yacht tackle blocks in the United States is the firm of W. H. McMillan's Sons, with salesrooms at 153 South Street, N. Y., and large factory buildings at 32 to 44 Penn St., Brooklyn, N. Y.

For over 70 years this well-known block concern has designed and manufactured the highest grade of yacht blocks, and their blocks may be found on small and large yachts in all parts of the world.

Their enviable reputation has been built up and maintained through manufacturing exclusively only high-grade blocks designed for strength, durability, and beauty of lasting finish that has met the approval of noted naval architects, yacht builders and yachtsmen throughout the marine world.

Their stock consists of a large assortment of small and large lignum vitæ and ash yacht blocks, with all the known styles of attachments for the small sail boat to the largest of yachts. This feature also enables them to make necessary repairs at short notice.

A new catalogue, descriptive of these various blocks, is about ready and will be

A Richardson runabout at the Buffalo Motor and Sportmen's show. This fast boat is all mahogany and is equipped with a Peerless special motor from which a speed of 35 m.p.h. is attained

mailed to any interested readers who will address the firm at Department Y, 153 South Street, New York.

Frisbies Can Be Had in New York

Bruns, Kimball & Co. have announced that they have been appointed distributors in the eastern territory of the well-known Frisbie Valve-in-Head motors. They are to-day distributors for many types of high-grade marine engines. The addition of the Frisbie Valve-in-Head motor rounds out the line. The Frisbies, which have been on the market for some twenty years, have earned an enviable reputation.

The first Bear Cat to be launched this season was built for P. J. Schaffer of Chicago. Pee-Jay, like other Bear Cats, is a mahogany runabout with black walnut trim. A Hall-Scott motor of 125 h.p. is expected to produce 35 m.p.h. or better

Motor Boat Movies

The Hall-Scott Motor Car Company, through its eastern sales and service branch at Buffalo, have secured a length of moving picture film showing some events of the very exciting race at Los Angeles and also the Fisher Trophy Race at Miami. This film is said by many boating enthusiasts who have seen it to show some of the finest boating scenes which it is possible to secure. This film will be loaned to responsible yacht clubs or other organizations to be shown to their members and can be had for the asking. It will provide a very interesting entertainment and requests will be attended to promptly.

Nourmahal Tenders Use Kermath Motors

The new ocean-going yacht launched recently for Vincent Astor at City Island is to be provided with a tender equipped with a Kermath four-cylinder engine. The selection of this motor for the small boats shows their reliability.

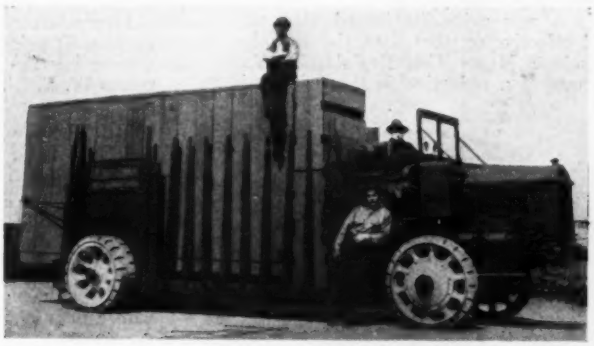
Navigators Wanted

Vacancies exist in the Bureau of Navigation, Department of Commerce, for navigation officers. Competitive civil service examinations will be held on June 22, and competent persons are urged to try for the positions. Full information will be sent by the United States Civil Service Commission, Washington, D. C.

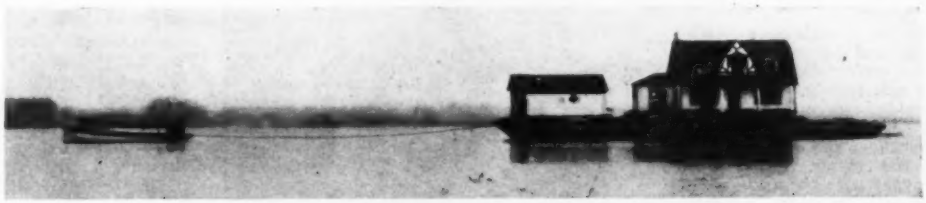
For the Vacation

A little outboard motor which will add to the pleasure of the vacation spent along any navigable waters is the 5-speed Caille which is adapted particularly for service with any rowboat. The addition of one of these motors affords an opportunity to hunt out new and pleasant places, to run to and from towns and camps quickly. The pleasures of motor boating can be had with-

Peerless II of Vermilion, Ohio, one of the fleet of the Southwest Fish Co. does heavy tow boat service with her three J.V.B. motors. Her propellers are 28 x 20-inch Columbian bronze wheels



A shipment containing one 175 h.p. Frisco Standard Marine Engine weighing 30,426 pounds. This load on a heavy duty truck is shown en route to the docks for forwarding to distant parts of the earth



Tiger, owned by M. E. Fuller of Algonac, Mich., has tackled many big jobs in her day. One of her latest tasks was the towing of a 185 x 50 foot lighter while loaded with two entire buildings for a distance of 12 miles. Her Scripps motor, true to past performance, never faltered. This motor has been running for 12 years doing the heaviest kind of work every day and is in as good shape as the day it left the factory

Gladys II, one of the finest cruisers in New Zealand. She is 45 feet long and driven by a six-cylinder Model FM Sterling at 15 miles per hour. Her builders, Bailey & Lowe of Auckland, have made Gladys II a very attractive boat

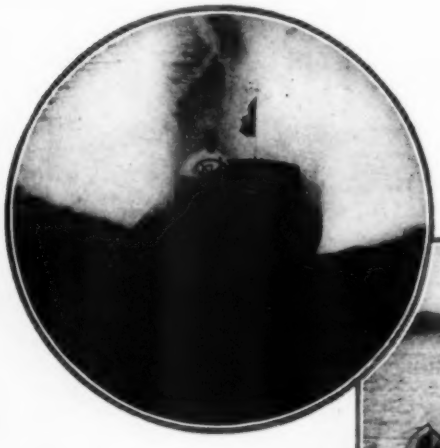
out the expense of a large boat. The engine has a neutral position with a positive control either forward or backward.

Prices Drop

In a new price list issued May 1st and effective on that date, the Buffalo Gasolene Motor Co., Buffalo, N. Y., announces a reduction in the prices of Buffalo marine engines applying to a majority of the Buffalo models, the exceptions being the smaller sizes, for which there is a less active demand and on which the margin of profit is already so small that a reduction in price has not been made possible by the slight saving in manufacturing costs on which the reduction in prices is based.

In announcing the new schedule of prices W. E. Blair, vice-president and general manager, said:

"During the last few months we have been making a slight saving in our costs of materials and labor. While this saving is not great enough to warrant a more extensive reduction in prices, we feel that it marks the trend of the times back to somewhere near old-time price levels. We are, therefore, anticipating further reductions in our costs and reducing our prices materially. This move is, of course, simply in line with the Buffalo policy of giving the buyer the advantage of any saving possible. As this reduction is based more on an anticipation of future savings than on savings already made, we think it is only fair to say that we do not see how any further reductions in the prices of Buffalo engines will be possible during the season of 1921 at least."



A 32-foot Honduras mahogany Hacker runabout and the standardized lapstrake cruiser built by the Red Bank Yacht Works. The power equipment of these boats is a six-cylinder MM Van Blerck motor for the runabout and an M4 Van Blerck for the cruiser. Both engines are equipped with the new fuelizer which enables the operator to have complete control of the boat at all times. In fact they will jump from low speed to the maximum possible in an instant

Buffalo Sportsmen's Show

At the Motors and Sportsmen's show held at Buffalo, April 11-16, the Skaneateles Company were the only concern that exhibited rowboats, outboard motor boats, dinghies and sailboats. The sailboat shown was their Leisure Hour Model, row and sail boat, which is 16 feet long and has a beam of 48 inches. It carries 100 square feet of sail. This boat was purchased by Ralph H. Sidway, of Buffalo, the best-known sportsman in western New York. The hydroplane shown was Arab IV, also the property of Mr. Sidway. This is the boat that sunk in the races last fall on the St. Lawrence River in 120 feet of water. Mr. Sidway was driving the boat at the time and was making better than 50 miles an hour with a Liberty motor. This boat will enter the races at Buffalo next August. Among other prominent yachtsmen of Buffalo who purchased the Leisure Hour models were Arthur Utz, of the Hall-Scott Motor Co., and A. H. Schoellkoff. These little sailers do not fail to attract favorable comment wherever they are shown.

(*Continued on page* 106)

21 Minutes Faster than the Fastest Train

—That was the running time of Garfield A. Wood's 50-foot express cruiser, *Gar Jr. II,* on its recent record breaking run from Miami to New York.

Nothing daunted by rough weather and a two-day fog which forced her 25 miles off shore, the determined little craft, with her daring owner at the helm, forged ahead through the open sea and put the 1260 miles behind her in 47 hours and 23 minutes running time—21 minutes less than the train time of the famous "Havana Special."

Despite the constant whipping of the sharp salt spray, *Gar Jr. II* came through the ordeal still gleaming bright —her surface absolutely unharmed.

For Gar Jr. II is Valsparred, of course!

VALENTINE & COMPANY

Largest Manufacturers of High-Grade Varnishes in the World—Established 1832

New York Chicago Boston Toronto London Paris Amsterdam

W. P. FULLER & CO., Pacific Coast

Photos © M. Rosenfeld

Gar Jr. II was built for G. A. Wood, of New York and Detroit, by the C. C. Smith Boat and Engine Company of Algonac, Mich. A 50-foot express cruiser with two Liberty Engines developing 900 h. p., she holds a record of 47.8 miles an hour. Throughout the Miami to New York run, she averaged 26.6 miles an hour.

VALENTINE'S VALSPAR

The Varnish That Won't Turn White

VALENTINE & COMPANY, 456 Fourth Ave., N. Y.

Special Offer

For your dealer's name and 15c in stamps, we will send you a 35c sample can of Valspar—enough to finish several square feet of surface. Fill out Coupon.

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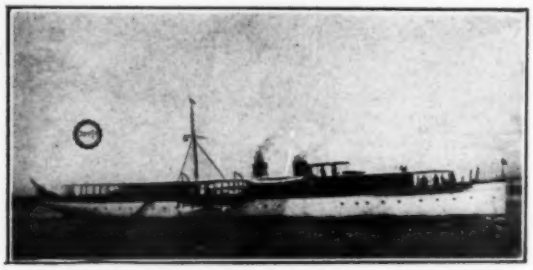
COX & STEVENS

Telephones:
BROAD 1924
BROAD 1375

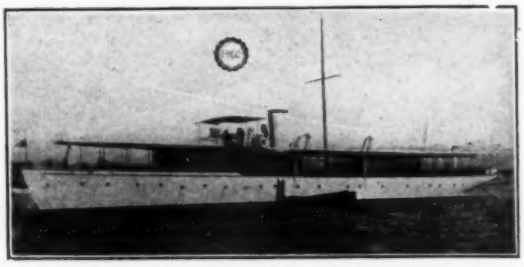
NAVAL ARCHITECTS—MARINE INSURANCE—YACHT BROKERS

15 WILLIAM STREET, NEW YORK

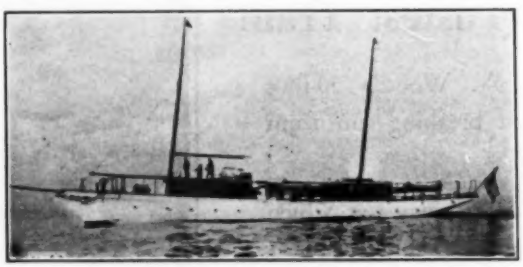
Complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request.



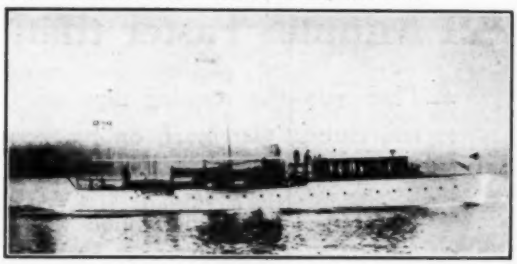
No. 3047—For Sale—Particularly attractive 165 ft. fast oil-burning twin-screw, steel steam yacht. Speed up to 19 miles. Beautifully finished and furnished. Large accommodation includes dining saloon and music room on deck, six staterooms and three bathrooms below aft. Cox & Stevens, 15 William Street, New York.



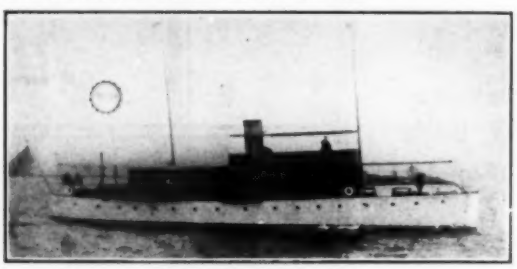
No. 1466—For Sale or Charter—Particularly desirable 140 ft. twin-screw steel cruising power yacht. Speed up to 18 miles; two 300 H.P. Standard motors. Dining saloon and social hall on deck; 3 double and 1 single staterooms, 3 bath and toilet rooms, etc. Recently overhauled thoroughly at large expense. In splendid condition. Cox & Stevens, 15 William Street, New York.



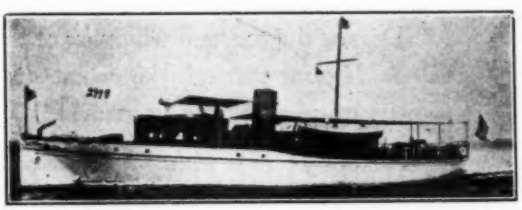
No. 40—For Sale or Charter—Flush deck steel steam yacht, 140 x 110 x 18 x 7.6 ft. draft. Has two deck houses, after one being used as a social hall. Quarters handsomely furnished and well laid out. Boiler and engine new 1916. Speed up to 14 miles. Cox & Stevens, 15 William Street, New York.



No. 979—For Sale (might charter)—Especially desirable 98 ft. twin-screw cruising power yacht. Speed up to 16 miles. Standard motors. Deck dining saloon, three double and one single stateroom, two bathrooms, etc. Teak wood deck house and deck trim. Completely overhauled. New furnishings throughout. Price reasonable. Cox & Stevens, 15 William Street, New York.

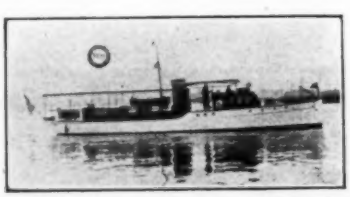


No. 2247—For Sale or Charter—Able twin-screw cruising power yacht; 89 x 15.3 x 4.9 ft. draft. Speed 12 miles. Two 80 H.P. Winton motors. Dining saloon, main saloon, three staterooms, two bathrooms and three toilets. Excellent condition. Low price. Cox & Stevens, 15 William Street, New York.



No. 2978—For Sale—Desirable twin-screw cruising power yacht; 80 x 14 x 4 ft. Speed 13 miles; two 50/60 H.P. Twentieth Century motors new 1919. Dining saloon, two double staterooms, bathroom and two toilets, galley, etc. Recently thoroughly overhauled at large expense. Cox & Stevens, 15 William Street, New York.

No. 3151—For Sale or Charter—Particularly desirable twin-screw houseboat; 77 x 17.6 x 3 ft. Speed 11 miles; two 6 cyl. 60-70 H.P. Standard motors new 1919. Large deck-house containing social hall; main saloon, two double and two single staterooms, two bath and toilet rooms, etc. Handsomely finished and furnished. Cox & Stevens, 15 William Street, New York.



No. 3533—For Sale—Fast 72 ft. twin-screw cruising power yacht. Speed up to 17 miles; two 6 cyl. 125-150 H.P. Winton motors. Dining saloon, two double staterooms, bath and two toilets, galley, etc. Cox & Stevens, 15 William Street, New York.

No. 2714—For Sale—Cruising power yacht; 62 x 11.6 x 3.9 ft. Speed 11 miles. 40-60 H.P. motor. Two saloons each with two berths. Double stateroom, bath and toilet room. Handsomely finished. Bargain for quick sale. Cox & Stevens, 15 William Street, New York.

Advertising Index will be found on page 126

NAVAL ARCHITECTS
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MARINE INSURANCE

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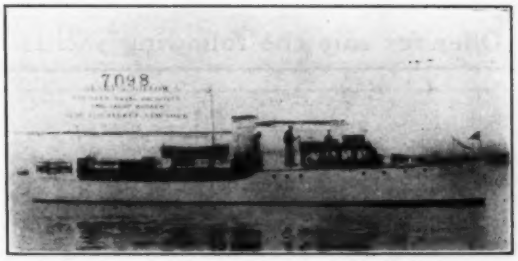
Plans and specifications for new yachts of any size or type should be prepared now to assure delivery for next year. Have plans of new yachts, all types, on file now.

We have a most complete and up-to-date list of steam and motor yachts of all sizes, sail, auxiliary, and houseboats on file in our office, kept constantly up-to-date by a thorough and comprehensive canvass of the entire yachting field from time to time. We are in a position to submit full information on any type of boat upon request.

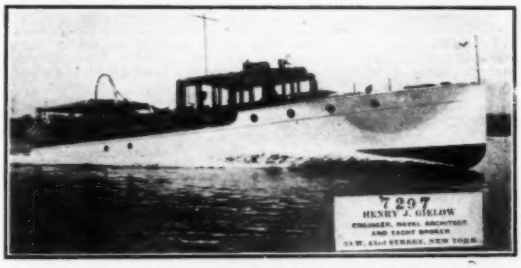
No. 8165—For Sale—Consider 50-60 ft. auxiliary part payment. New houseboat 45 x 13 x 3. Speed 9 miles. In commission. Double and single stateroom, saloon and bath. Also deck saloon. Delco lighting plant. All complete and perfect condition. Henry J. Gielow, Inc., 25 W. 43rd Street, New York City.



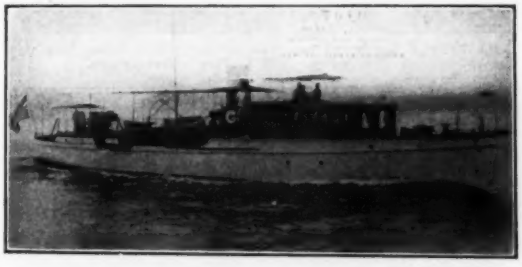
No. 7098—For Sale—Bargain modern 72 ft. Lawley built twin-screw motor yacht of recent build. Speed 12 to 14 knots; two 6 cyl. 150 H.P. Winton motors. Two double staterooms, bathroom and two toilets. Deck dining saloon. Owner anxious to sell. Henry J. Gielow, Inc., 25 W. 43rd Street, New York City.

No. 8080—For Sale—Charter—New modern 85 ft. twin-screw cruising houseboat. Deck dining saloon and galley. 2 double, 3 single staterooms. Hot water heat. 3 baths. Shoal draught makes attractive type Florida cruising. Two 50 horsepower motors give speed 10 miles. Good sea boat. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.

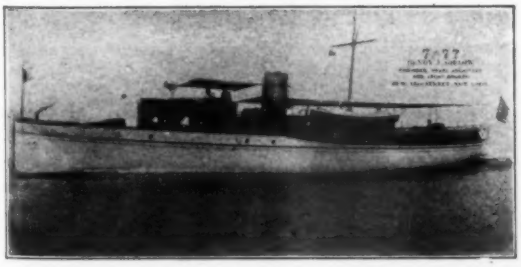
No. 7002—For Sale or Charter—Finest yacht of type available. 138 ft. twin-screw power yacht. Two 300 H.P. Standard engines. Dining room and social hall on deck; three double and one single staterooms; two bathrooms. All furnishings new 1920. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.



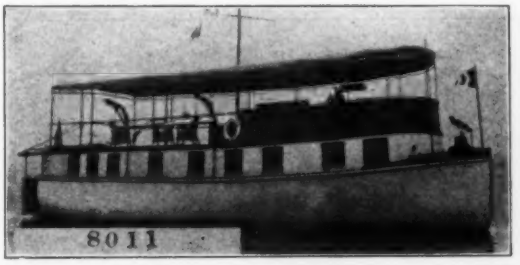
No. 7297—For Sale—Attractive high grade 48 ft. twin-screw express cruiser. New Van Blerck motors and upholstery 1920. Speed 21-24 miles. Excellent sea boat through shoal draught, and desirable for Southern and Northern use. Two cabins and separate galley. Crew forward. Bridge deck enclosed in removable glass partition. Cockpit aft. Modern in all appointments. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.



No. 7040—For Sale—Bargain—Modern Lawley built 96 ft. twin-screw motor yacht. 15 ft. beam. Standard motors. Speed 11 miles. Deck dining saloon, 2 double staterooms. Accommodate seven. Economical, can run with 4 crew. Able sea boat. Furnishings new 1919, includes player piano. Large bridge and good deck space. Fine condition. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.



No. 7077—For Sale—Particularly desirable 80-foot twin-screw power yacht. "20th Century" 50/60 H.P. motors, new 1919. Deck dining room, two double staterooms, bathroom. All furnishings and equipment new 1919. Excellent condition. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.



No. 8011—For Sale or Charter—Most commodious 51-foot cruising houseboat available. Standard motor. Large deck space. Two double and two single staterooms. All good condition. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.

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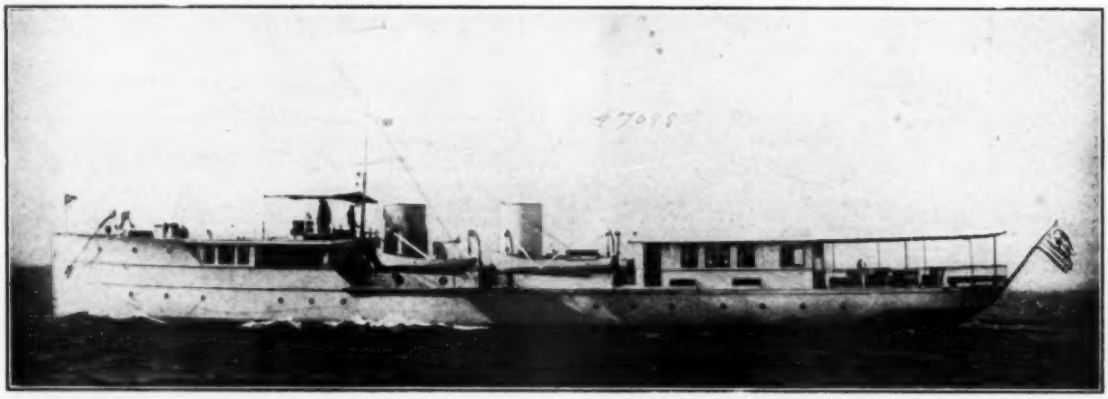
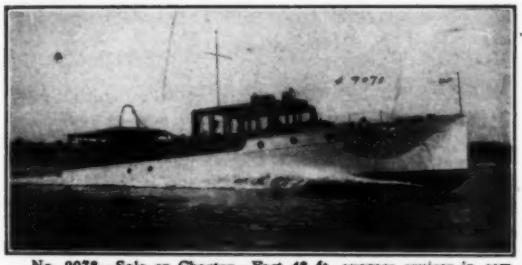
52 Pine Street New York City

Offer for sale the following yachts, some of which are available for charter



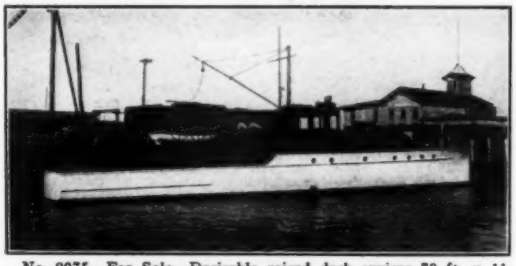
No. 7098—Unusual opportunity to purchase the largest cruising steel motor yacht afloat—140 ft. overall—19 ft. 6 in. beam—6 ft. 6 in. draft. Designed by Tams, Lemoine & Crane and built by Lawley. An exceptionally able yacht. Triple screw having three 6 cylinder. Speedway motors. Gasoline consumption low. Speed 16 miles per hour. Large cruising radius. Has very commodious owners' quarters attractively fitted and furnished. In absolutely A-1 shape throughout.

No. 7474—Sale—Brand new fast cruiser; 2-6 cylinder Sterling motors. Speed 21½ miles. All modern conveniences.

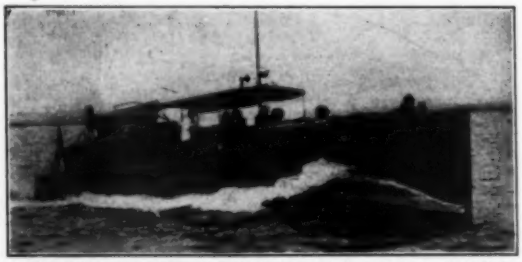


No. 9078—Sale or Charter—Fast 48 ft. express cruiser in commission. Immediate delivery—2 new 6 cylinder Van Blerck motors. Good accommodations. Thoroughly overhauled last year in all departments.

No. 8102—Sale—Charter; most desirable raised deck cruiser available. Practically new. 81 ft. x 13 ft. x 5 ft. draft. Speed 15 miles. Electric light, hot water, heat and refrigerating plant.



No. 9075—For Sale—Desirable raised deck cruiser 70 ft. x 11 ft. x 4 ft. Good accommodations. Speed 23 miles.



No. 8978—For Sale—Raised deck semi day cruiser. 200 H.P. Sterling motor. Speed 20 miles per hour. In the very best of condition. Price reasonable. Full particulars and plans from Tams, Lemoine & Crane, 52 Pine Street, New York.

No. 1927—Sale—Charter—Very desirable, twin screw houseboat; 5 staterooms, 3 bathrooms, dining saloon, lighted by electricity and hot water heat.

Advertising Index will be found on page 126

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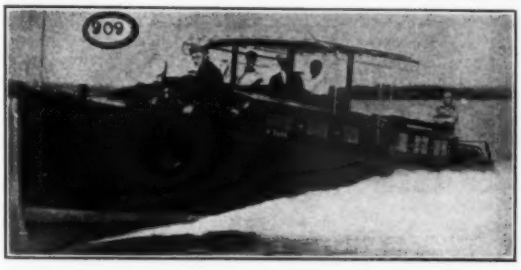
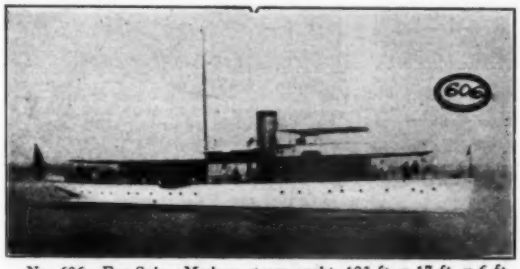
We have a complete list of all Steam and Power Yachts, Auxiliaries and Houseboats which are offered for sale and charter

Plans, Photographs and full particulars furnished on request.

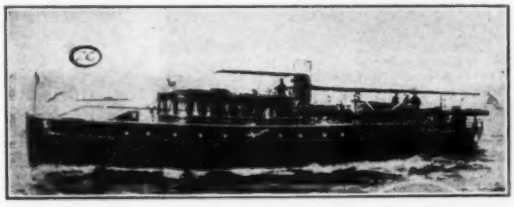


No. 909—For Sale—Twin-screw express day cruiser. Length 42 ft., beam 9 ft. Equipped with two 150 H.P. Speedway engines. Speed 31 miles per hour. Construction of the best. Excellent seaboat. Edward P. Farley Company, 6 North Michigan Avenue, Chicago, Ill.

No. 971—For Sale—32 ft. Speedway runabout. Equipped with 40 H.P. Speedway motor. Speed 18 miles. Completely equipped with top, windshield, etc. Excellent condition. Edward P. Farley Company, 6 North Michigan Avenue, Chicago, Ill.



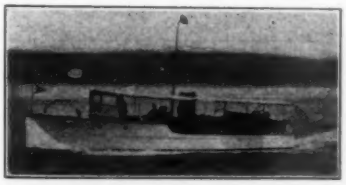
No. 606—For Sale—Modern steam yacht, 123 ft. x 17 ft. x 6 ft. draft. Speed up to sixteen miles. Three single and two double staterooms. Dining and social hall on deck. In excellent condition throughout. The finest yacht of her size available. Edward P. Farley Company, 6 North Michigan Ave., Chicago, Ill.



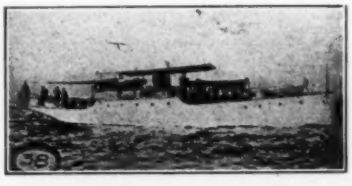
No. 26—For Sale—100 ft. twin-screw power yacht of recent construction and thoroughly modern in all details. Has exceptional accommodations consisting of three double and two single staterooms, dining saloon in deckhouse forward. An able and comfortable cruiser. Edward P. Farley Company, 6 North Michigan Ave., Chicago, Ill.

No. 986—For Sale or Charter—1919 twin-screw cruiser. Houseboat type. 62 ft. x 15 ft. 4 in. x 2 ft. 6 in. Sterling motors. Speed 12 miles. Attractively arranged and furnished. Contructed for use in northern and southern waters. Edward P. Farley Company, 6 North Michigan Avenue, Chicago, Ill.

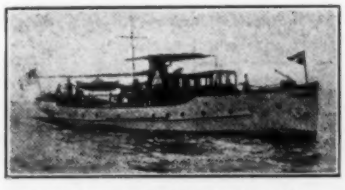
No. 451—For Sale—85 ft. x 15 ft. 6 in. x 4 ft. power yacht. Attractively furnished and fitted throughout. Equipped for extensive cruising. Two double and one single staterooms, bath, etc. Has deck social hall. (Located Great Lakes.) Edward P. Farley Company, 6 North Michigan Avenue, Chicago, Ill.



No. 1019—For Sale—60 ft. Speedway express cruiser. Excellent seaboat. Speed up to 26 miles per hour. Accommodations excellent. Price reasonable. Edward P. Farley Company, 6 North Michigan Avenue, Chicago, Ill.



No. 38—For Sale—78 ft. Lawley built cruiser. Winton motor. Two commodious double staterooms. Two toilets. Dining saloon in deckhouse forward. A very able and modern boat. Edward P. Farley Company, 6 North Michigan Avenue, Chicago, Ill.



No. 584—For Charter—85 ft. twin-screw cruiser. Winton motors. Speed up to 14 miles. Dining saloon on deck. Five staterooms, etc. Attractively furnished and in excellent condition throughout. Edward P. Farley Company, 6 North Michigan Avenue, Chicago, Ill.

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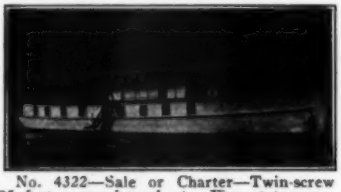
No. 1525—43 foot cruiser. Four berths in main cabin and one in engine room. Toilet, etc. 24-30 H.P. 20th Century motor. 4 cylinders. Speed 9-10 miles. Electric lights, etc.

No. 4225—Sale or Charter—51 foot power houseboat. Three staterooms, main saloon toilet. 32-37 H.P. Standard motor. Speed 8 miles. Electric lights. Very comfortable boat.

No. 2093—52 foot express cruiser. Double stateroom. Main cabin with four berths. Two toilets. Two berths and toilet for crew. 200 H.P. Sterling motor. Speed 24 miles.



No. 4322—Sale or Charter—Twin-screw 85 foot power houseboat. Five staterooms, dining saloon, three baths, etc. Speed 10 miles.

No. 1899—63 foot power yacht. One double and one single stateroom. Two Pullman berths in saloon. Toilet and bath. 70-90 H.P. Standard motor. Speed 15 miles. Electric lights, etc.

No. 2136—Sale or Charter—Twin-screw 80 foot power yacht. Two double staterooms, dining saloon, etc. Two 220 H.P. Standard motors. Speed up to 21 miles.

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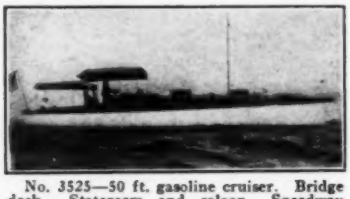
No. 5908—105 ft. twinscrew gasoline cruiser. Best design and build. Splendid sea boat. Good speed. Two 6 cylinder Standard motors. Frank Bowne Jones, Agent, 29 Broadway, New York.

No. 4084—For Sale or Charter—One of the Mathis 75 ft. power house yachts. Exceptional accommodations. Splendid motors. In commission. Frank Bowne Jones, Agent, 29 Broadway, New York.

No. 3413—80 ft. twin screw cruising gas yacht. Lawley build. Practically new. Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.

No. 162—60 ft. express cruiser. Recent build. Twin-screw. Speed up to 30 miles. Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.



No. 3525—50 ft. gasoline cruiser. Bridge deck. Stateroom and saloon. Speedway motor. Speed over 12 miles. Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.

Advertising Index will be found on page **126**

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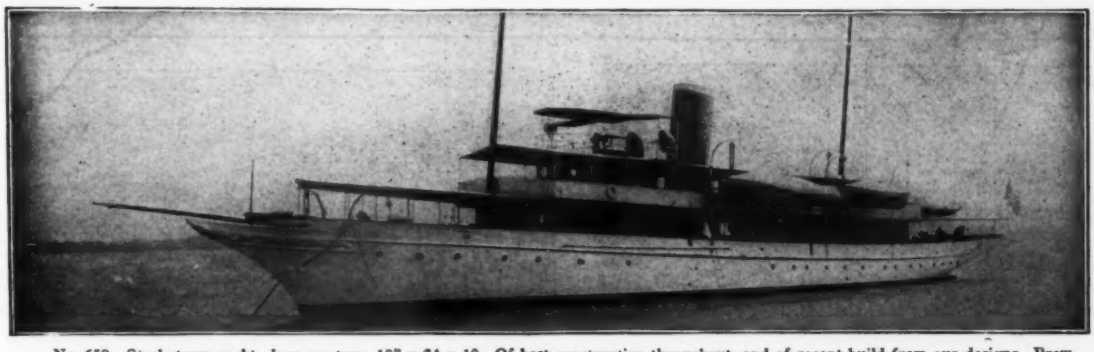
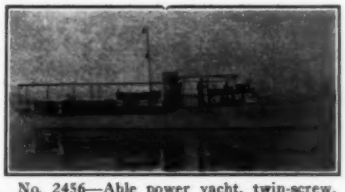


No. 659—Steel steam yacht, deep sea type, 187 x 24 x 10. Of best construction throughout, and of recent build from our designs. Promenade deck full width of boat. Has two large deck houses, with chart house and Captain's room on upper deck. Finely appointed owner's and guests' quarters. Was not used in Government Service. In best possible condition and should be seen to be fully appreciated. Inspection invited.



No. 2456—Able power yacht, twin-screw, 72 x 13.3. Two 6 cylinder Winton motors. Speed 15 knots. Everything first class condition.

No. 2345—Patrol type. Twin-screw express cruiser, 60 x 10. Two six cylinder motors. Speed 25 knots. Very reasonable figure.

No. 2044—Bridge deck cruiser, 63 x 13.6 x 4. Twentieth Century motor, 4 cylinder. Speed 11/12 miles. Attractive interior arrangement.

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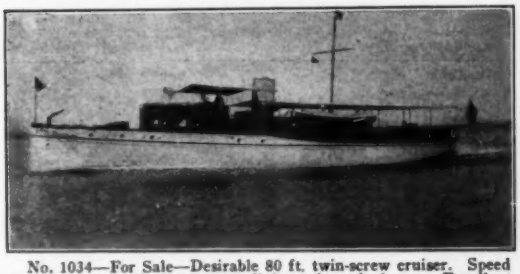
No. 726—For Sale—Unusually high-class 55 ft. express cruiser. Speed 20-25 miles. 1 double stateroom and saloon. A yacht expressing individuality which can be recommended.

No. 794—For Sale or Charter—High class 85 ft. twin-screw express cruiser. 5 staterooms, bath, etc. In best of condition. Unusually attractive. Speed 20 miles.

No. 1295—For Sale—54 ft. bridge deck cruiser. 1 double stateroom and saloon. Speed 12 miles. Excellent construction. Others from 30 to 110 feet.



No. 1034—For Sale—Desirable 80 ft. twin-screw cruiser. Speed 14 miles. 2 double staterooms, dining saloon, bath, etc. Excellent condition and a wonderful sea boat.

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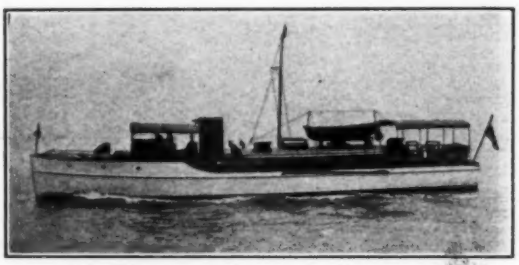
For Sale—Used 36 foot Elco express runabout. Powered with 100 H.P. 6 cylinder Elco motor with starter and generator developing 26 miles per hour. Full equipment and in excellent condition having been used very little. Cost today with tax $8,800.00. Will sell for $4,500.00. Can be inspected at our yard. Rochester Boat Works, Inc., 10 Charlotte Station, Rochester, N. Y.



For Sale—Yacht Celeritus, 61 ft. O. L. x 11 ft. 6 in. x 3 ft. 9 in. Designed by Swasey. Built by Jacobs 1916. Redesigned 1919. Motors overhauled 1920. Power plant, two Sterling eight cylinders 150/200 H.P. each. New power dinghy built 1920. Perfect order. Complete inventory. Price low. Apply Oliver, 417 Canal Street, New York.

For Sale—Beautiful 26 foot mahogany runabout with fine four cylinder engine. Speed 16 miles. Condition perfect, like new. Completely equipped $750. Worth double. Charles Duguid, 4935 Broadway, New York.

No. 1817—For Sale—At very reasonable price. Express runabout 28 ft. x 6 ft. x 2 ft. Used one season. Condition excellent. Apply John G. Alden, 148 State St., Boston, Mass.

No. 1746—For Sale—High grade day cruiser, 30 ft. x 9 ft. x 3 ft. Built 1918 and very little used. Scripps motor. Speed 10-14 miles. 2 berths and toilet forward. Large cockpit. Well built, handsomely finished. Price attractive. Apply John G. Alden, 148 State St., Boston, Mass.

No. 1586—For Sale—Bargain. 45 ft. bridge deck day cruiser. Apply John G. Alden, 148 State St., Boston, Mass.

Licensed engine and mechanic, open for position on gasoline yacht. Twenty-five years' practical experience. Will go any where. C. E. Jones, Freeport, L. I., N. Y.

Sterling Engines—One or pair FM 8 cylinder, 170 H.P., 5½ in. bore, 6¼ in. stroke motors. Full equipment, including tachometers, Bosch dual two spark magnetos, Bosch starters and generators. Completely overhauled. $2250 each, Buffalo, where motors are stored. Hall-Scott Motor Car Co., Inc., Buffalo, N. Y.

For Sale—Able deep sea cruiser, 43 ft. 0in. x 10 ft. 6 in. x 3 ft. 6 in. Designed and built by Nock, 40 H.P. Sterling heavy duty motor. Speed eleven miles. Two cabins, sleeps six passengers. Berth for man in engine room. First class condition throughout. Full equipment for cruising. In commission at New Rochelle on Long Island Sound. For particulars address J. H. Wallace, 5 Beekman Street, New York.

For Sale—Desirable and speedy, better than 30 M.P.H. V-bottom runabout. Equipped with practically new 4 cyl. F S Sterling engine. Complete with electric starter. Motor used less than 50 hours. Address F. E. Armitage, 306 Pine Street, Jamestown, N. Y.

For Sale—Stevens-Duryea Model S, 6 cylinder 65 H.P. engine. Fly wheel front. Never used since all cylinders, pistons, rings, cam shaft, connecting rod bearings replaced with brand new parts. Imported Bosch magneto. This is a real motor and equal to new. Clutch and transmission also if desired. Make offer. Might take real cruiser in part payment. Box 1028, Saco, Maine.

For Sale—2 cyl. 10 H.P. 2 cycle Monarch, $70.00. 18 H.P., 3 cyl. 2 cycle $95.00. 3 H.P. Spaulding $35.00. 4 cyl. 4 cycle Buick $75.00. 60 H.P. Lamb unit Plant $1,375.00. 4 cyl. 4 cycle Metz $40.00 and 40 more. Get our complete list. Jesiek Boat Company, Grand Rapids, Mich.

Cabin cruiser—Built by Stearns & McKay, Gloucester, Mass. Length 27 ft.; 30 H.P. Mahogany trimmings. Gray motor. Electric lighting and starting. Fitted with toilet, wash-basin, ice-box, oil-stove, and cabin and cockpit seat cushions. Built 1915 and very little used. Speed 12 to 14 miles per hour. At Bearse's Ship Yard & Marine Railway, Chatham, Mass. Name: "Anne." Address, Mr. Bearse.

Waterfront—Choice waterfront lots on Pelham Bay, Throg's Neck, Bronx. Easy terms. Ideal location for boat clubs. Room 905, 87 Nassau St., New York City.

For Sale—Two cylinder, 36 H.P., two cycle Kahlenberg engine. A-1 condition. Complete with spare parts, clutch, shaft, stuffing box, propeller. Box 91, MoToR BoatinG.

Wanted—Man or man and wife to share pleasure cruise around the world. Address E. S. care of MoToR BoatinG.

For Sale—Forty foot express runabout. Mahogany hull. Splendid condition. Completely equipped. New 220 H.P. Benz engine. Very fast. Delivery New York. Reasonable price. John M. Larsen, 347 Madison Avenue, New York City.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, etc., required by the Act of Congress of August 24, 1912, of MoToR BoatinG, published monthly at New York, N. Y., for April 1, 1921. State of New York, County of New York, ss. Before me, a Notary Public, in and for the State and county aforesaid, personally appeared C. F. Chapman, who, having been duly sworn according to law, deposes and says that he is the Business Manager of MoToR BoatinG, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit: 1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, International Magazine Company, 119 West 40th St., New York, N. Y.; Editor, C. F. Chapman, 119 West 40th St., New York, N. Y.; Managing Editor, C. F. Chapman, 119 West 40th St., New York, N. Y.; Business Manager, C. F. Chapman, 119 West 40th St., New York, N. Y. 2. That the owners are: International Magazine Company, 119 West 40th St., New York, N. Y.; Stockholders, W. R. Hearst, 137 Riverside Drive, New York, N. Y.; M. V. Hearst, 137 Riverside Drive, New York, N. Y. 3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: Columbia Trust Company, 60 Broadway, New York, N. Y.; M. V. Hearst, 137 Riverside Drive, New York, N. Y.; W. R. Hearst, 137 Riverside Drive, New York, N. Y.; Arthur Brisbane, 238 William St., New York, N. Y.; Lina Strauss, 27 West 72nd St., New York, N. Y.; George J. Gould, 165 Broadway, New York, N. Y.; E. H. Gary, 856 Fifth Avenue, New York, N. Y.; Samuel Untermyer, 37 Wall St., New York, N. Y.; George W. Perkins Estate, 71 Broadway, New York, N. Y.; James Speyer, 1038 Fifth Avenue, New York, N. Y. 4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the names of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him. C. F. Chapman, Business Manager. Sworn to and subscribed before me this 31st day of March, 1921. [Seal.] K. J. Moore, Notary Public, New York County. New York Co. Clerk's No. 343, New York County's Register's No. 3144. (My commission expires March 30, 1923.)

One cyl. 2 cycle		Two cyl. 2 cycle		Four cycle	
2 H.P. Caille	$35.	18 H.P. Kahlenberg 6½x7	325.	6 H.P. Imperial, one cyl., new	135.
3 H.P. Waterman (outboard)	40.	20 H.P. Emerson	115.	8 H.P. Clark, one cyl. 6x6½	165.
3 H.P. Gray (outboard)	40.	Three cyl. 2 cycle		10 H.P. Buffalo, 2 cyl. and gear	145.
4 H.P. Northwestern	45.	12 H.P. Straubel & gear	$175.	12 H.P. Universal and gear, 4 cyl.	255.
6 H.P. Gray	65.	18 H.P. Fairbanks	145.	20 H.P. Buffalo and gear 4 cyl.	275.
8 H.P. Fox	75	35 H.P. Vim & gear	185.	24 H.P. Dunn, 6 cyl, new	225.
Two cyl. 2 cycle		Four cyl. 2 cycle		100 H.P. New Curtiss, 4 cyl. 5¼x7, aviation motors	325.
6 H.P. Ferro	$75.	20 H.P. Roberts	$155.		
8 H.P. Termaat-Monahan	75.	24 H.P. Fairbanks	225.		
12 H.P. Lockwood-Ash	85.	40 H.P. Emerson	265.		
12 H.P. Atlantic	90.	Four cycle			
12 H.P. Ferro	95.	4 H.P. Dunn, 2 cyl.	$ 55.		

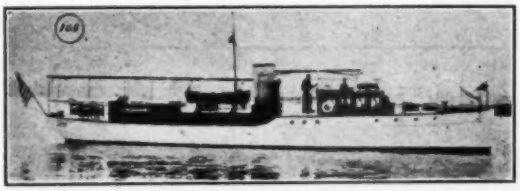
and many others. We buy and trade motors.
BADGER MOTOR CO., MILWAUKEE, WIS.

Advertising Index will be found on page 126

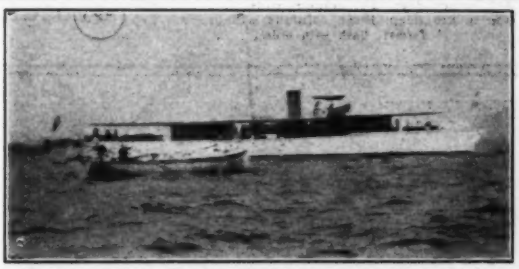
Telephone Connection
Suite 401

R. M. HADDOCK
NAVAL ARCHITECT and YACHT BROKER
50 East 42nd Street, New York

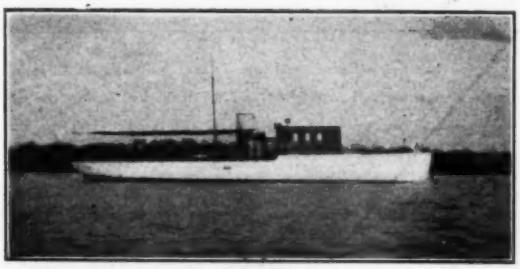
Marine Insurance



No. 106—For Sale—72-foot recent Lawley built, twin-screw motor yacht. Two double staterooms, dining saloon, bath, etc. Winton engines. Is laid up near New York. Offer wanted. For particulars inquire of R. M. Haddock, 50 East 42nd St., New York.

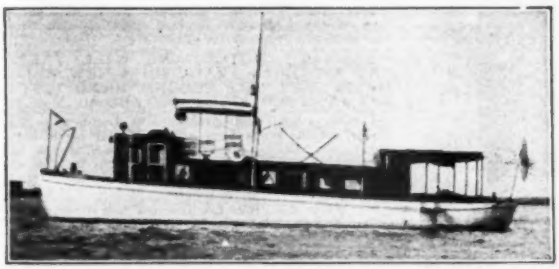


No. 160—Sale or Charter—Steel motor yacht about 140 feet. Exceptionally fine boat completely found and equipped. Can be put in commission in about 10 days. Available for N. Y. Y. C. Cruiser. For particulars write to R. M. Haddock, 50 East 42nd St., New York.



No. 116—For Sale—Attractive 80-foot motor yacht. Completely overhauled and handsomely furnished. 125 H.P. Standard engine. Can be placed in commission in a week's time. Has two double staterooms, deck dining saloon and is an easy boat to operate. Price reasonable. Offer wanted. R. M. Haddock, 50 East 42nd St., New York.

No. 177—For Sale—30-foot runabout. Built in 1918. Has had but little use. 90 H.P. Sterling engine. Speed 30 M.P.H. Price moderate. For further particulars apply to R. M. Haddock, 50 East 42nd St., New York.



Yacht "Avis"—Built in 1918 by Berger. Heavy construction. 52 ft. x 11 ft. x 3 ft. 8 in. Twin-screw. Doman 25 H.P. engines. Electric starters; 3 H.P., 32 volt light plant. Pilot house, two double staterooms, galley and engine room, large cockpit. Fully found. Fine light and air. Great sea boat. Wonderful condition. Over $3,000 spent 1920 fitting out. E. L. Hayward, 209 So. State St., Chicago, Ill.

For Sale—28½-foot cruiser. Fully equipped. In commission. Inspectable New York. New 12 H.P. 4 cycle Palmer double ignition. Wm. C. Atwater, Jr., 1 Broadway, New York. Bowling Green 8421.

For Sale—90 H.P. Fiat motor. Excellent condition. Electric starter, battery, etc. Will run on angle. Equipped with marine reverse gear, bronze shaft, propeller, $755. With starter ignition only $580. Wm. Atkin, Naval Architect, Montclair, N.J.

Bargain—New 16-ft. mahogany trimmed hydroplane from Hacker's design. Spruce, copper fastened, new brass and bronze equipment. No motor. Will sell cheap. A. F. Munro, 432 So. Washington Ave., Lansing, Mich.

Wanted—Motor dory (Seabright), 28½ to 33½ feet, cabin toilet. Easy one-man control, for cruising. Reasonable price. N. R. Barrett, 3052 Emmons Avenue, Sheepshead Bay, L. I.

All Sizes Rebuilt Marine engines from one to 300 H.P. 4 cyl. 4 cycle GLOBE 10 x 14", reverse gear, magneto, 48" propeller, $3,000.00. Pair STANDARD 300 H.P. 12 x 14" reversible, cost $25,000.00 each, price $4,000 each. Many other large and small four cycle and two cycle engines, for work boats, yacht, cruiser or tender. Write for list.

Hamilton Marine Engine Exchange 440 Fifty-Second St. Brooklyn, New York

Rebuilt Marine Engines
IN CHICAGO

These engines are completely overhauled, rebuilt and refinished by our marine engine experts. Look like new, run like new, and are thoroughly guaranteed. Here's a chance to get a high-grade motor at a big saving.

Our present stock includes Sterlings, Domans, Grays, Buffalos, etc., taken in trade for new engines. Write today for latest list if you want a real bargain.

W. L. MASTERS & COMPANY
231 North State Street Chicago, Illinois

Agents for Sterling, Scripps, Frisbie, Kermath, Universal, Gray & Evinrude Motors.
New engines and repair parts always in stock.

THE MOTOR BOATING MARKET PLACE

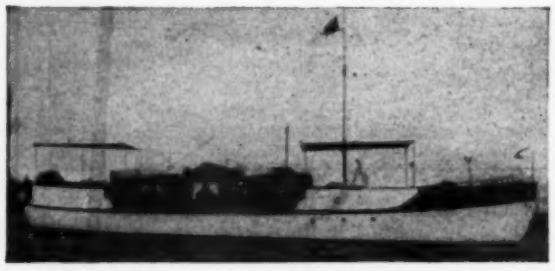
The rate for "For Sale" and "Want" advertisements is 6 cents per word, minimum $1.50. If an illustration is used, the charge is as follows, which includes the making of the cut:

Cut one inch deep, one column wide..... $ 5
Cut 1½ inches deep, 1½ column wide..... $10
Cut 2¼ inches deep, three columns wide..... $20

Terms: Cash with order.

Opportunities for the Motor Boatman

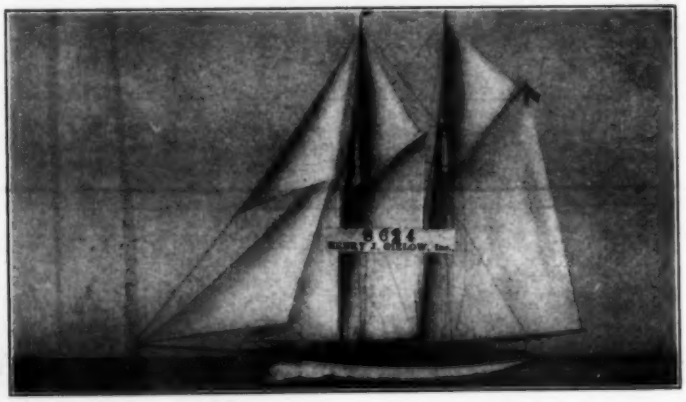
Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MoToR BoatinG.



A High-Class Bridge Deck Cruiser

50 ft. by 11 ft., 32-37 h.p., 1915 Standard engine, mahogany cabin toilet, galley, electric lighting and full equipment. Room 704, 39 Cortlandt St., N. Y.

No. 7634—For Sale—Exceptional type Lawley built cruiser 43 ft. x 9 ft. 4 in. x 3 ft. 6 in. Sterling motor. Speed 11-13 miles. Double stateroom and saloon. Attractively furnished and all teak deck trim. Able, comfortable cruiser with deck saloon. Sleeps eight. Separate electric plant. Henry J. Gielow, Inc., 25 West 43rd Street, New York, N. Y.



No. 8624—For Sale—Auxiliary keel schooner, 84 x 61 x 19 x 8 ft. One double, three single staterooms, bath. 40 H.P. motor. Speed 7 knots. $35000 spent 1920. Permanent improvements. Price reasonable. Seen New York. H. J. Gielow, Inc., 25 W. 43rd St., New York.

For Sale—Elco express, 35 foot runabout with Cadillac 8 cylinder engine. Very completely equipped with cushions, chairs, tools, electric lights and in very good condition. Boat now at Hague, Lake George. Address R. E. Gillmor, care of the Equitable Trust Company, 45th St. and Madison Ave., New York City.

Auto Motor Supplies—Buick—Michigan—Stoddard Dayton—Cadillac—Overland—E.M.F. Continental and Buda Motors, all types $50 each and up. Special high tension 2 and 4 cylinder Magnetos $9.50 each. Electric and Gas Head Lamps—Coils—Carburetors—Air Compressors—Generators—Starters, etc. Write for late catalogue. Address Motor Sales Dep't. B, West End, Pittsburgh, Pa

Wanted—Cruiser 45 to 60 feet long. Must be first class boat. Speed 12 miles or over. Send me particulars. L. Cook, 1918 Sunnyside Ave., Chicago, Ill.

No. 1010—Trunk cabin cruiser, 35 x 9 x 3, Seabury built. Speedway 40 H.P. motor. Seaworthy, $2500. Ruddock Yacht Works, 214th St. & Harlem River, N. Y. City.

For Sale at Bargain—125 H.P. Herahell Spielman engine, 6 cylinder 4 cycle. Complete with Bosch magneto and carburetor. Almost new. Cost $1,500.00. Selling price $500.00. Modern Machinery Exchange, 182 Centre St., New York City. Tel. Frank 1770.

For Sale—Sloop 35½ x 8½ ft. beam. Two main sails, one new. 3 jibs and one balloon. Jib, anchor, compass, lights and dinghy. Everything in fine condition. $800. Jesiek Bros., Holland, Mich.

TRIMOUNT WHISTLE BLOWER OUTFITS
Blower runs by friction contact with engine flywheel. Whistle of brass, nickel-plated.
Made in 3 sizes.

TRIMOUNT ROTARY HAND BILGE PUMPS
All bronze composition. Suction lift 6 to 20 feet. A lifelong convenience.
Made in 3 sizes.

TRIMOUNT ROTARY POWER CO.
30 Heath Street Boston, Mass.
(Factory: 293 Whiting Ave., E. Dedham, Mass.)

For Sale—40 ft. 5 in. x 6 ft. 9 in. mahogany runabout "Chinook", speed 25 M.P.H. Equipped with six cylinder 5½ x 6 Van Blerck engine, electric starter, generator, electric lights, windshield, upholstered seats, top and curtains. Boat is in excellent condition and immediate shipment can be made to any point desired. Value $7,500.00; will sell for $5,000.00. Address Winton Engine Works, Cleveland, Ohio.

Canada's exclusive wholesale and retail marine engine jobbers. Dominion's Largest Distributors. Free illustrated catalog, showing over fifty manufacturers' products. Canadian Boat and Engine Exchange, Ltd., Toronto, Canada.

90 H.P., 8 cylinder "V" Curtiss OX-5 engines, 4 in. bore, 5 in. stroke, 1400 R.P.M., weight 390 pounds. Brand new in original crates with all accessories, magneto, carburetor, thrust ball bearing, manifolds, ready to run. For sale by U. S. Products Corporation, Kansas City, Mo.

I am in the market for two high-class, used boat toilets, pump type, for house boat use, must be best quality, and almost new; also twenty feet of 3 in. tobin bronze or better shafting; bronze propeller about 46 x 30. 200 H.P. reverse gear at 300 R.P.M., for cash. Please give full particulars. Address "House Boat," care of MoToR BoatinG.

Passenger or tug boat engine, 4 cylinder, 4 cycle 7 in. bore 9 in. stroke, 30 to 40 H.P. Slow speed. Heavy duty type. Complete with reverse gear. Ignition system. Schebler carburetor and propeller wheel. Good running order. Price, $600.00. Two cylinder 12-16 H.P. Smalley with Schebler carburetor. Good running order, $150.00. Two cylinder 6 H.P. Gray, not overhauled, $45.00. Single cylinder 2½ H.P. Royal engine, not overhauled, $25.00. Gray Motor Corp., Detroit, Mich.

KERMATH MOTORS—WE WILL TAKE ANY MOTOR IN TRADE ON A NEW KERMATH. GET OUR SECOND HAND LIST. KERMATH MFG. COMPANY. (Detroit, Mich.)

I have a few pair of Bausch & Lomb 6 x 30 power, prism binoculars and will sell them for about one-half of the regular price—this is a wonderful opportunity for yachtsmen to get a good pair of glasses. Percy M. Child, 1110-14th St., N.W., Washington, D. C.

For Sale: 1. 2KW Carlisle & Finch direct connected lighting plant, and 1, 5 KW Winton direct connected plant; also 1-18 in. and 1-14 in. Rushmore searchlight and one 9 in. all brass-stand deck type yacht searchlight, and a few 150 lb. mushroom anchor. Percy M. Child, 1110-14th St., N.W., Washington, D. C.

Wanted—Cabin cruiser, ocean going. Not over 50 ft., and in first class condition. Submit full details, specifications and price. Also consider auxiliary cruiser or yawl. Address Lopez, Mata, Prov. Santa Clara, Cuba.

For Sale—Bridge deck cruiser, 52 feet long. Built by Gas Engine & Power Co. Speedway engine. Perfect condition. One man boat. Located Jacob's Yard, City Island. Price $16,000. R. J. Schaefer, 617 Lexington Avenue, New York.

No. 1011—Raised deck cruiser, 31 x 8 x 3. New last season. Fairbanks 30 H.P. motor. Completely refinished and in perfect condition $2500. Ruddock Yacht Works, 214th St. & Harlem River, N. Y. City.

For Sale—35 foot cabin cruiser, seaworthy, sound, 4 cylinder 30 H.P. Frisbie motor. First class boat fully equipped. Price reasonable. On Connecticut River ready to go anywhere. Full description and price on request. Box 373, New Britain, Conn.

Gasoline Motors For Sale—Four Hinkler heavy duty motor, Model HA200, 4½ in. x 5½ in. L head type. Nos. 20185, 20197, 20198, 20199. Three Gray 12 H.P. motors, Model NK. These motors have been used about one month only. Detroit Gear & Machine Co., 670 Woodbridge St. E., Detroit, Mich.

Wanted—About 120 ft. steel boat—motor or steam (oil-burning), in exchange for Chicago suburb 5 acre block and bungalow. Lock Box 72, Homewood, Ill.

Wanted to hire—Reasonable price 35 or 40 ft. cruiser. Sleep 4. For trip on Sound and Lake Champlain. Month of August. By former motor boat owner. Address Fitch, 20 Whittlesey Ave., East Orange, N. J.

Advertising Index will be found on page 126

Speed STRONGLY BUILT 35 FOOT LAWLEY EXPRESS RUNABOUT WITH 135 HORSE POWER HIGH-SPEED STERLING MOTOR OFFERED FOR SALE

Up to the minute model, Crouch design, mahogany, V-bottom, A-1 condition. Hull and engine practically new. Could not be duplicated today for less than $6000.
Apply Frank Bowne Jones, 29 Broadway, New York. Tel. Whitehall 1170. Or your own broker.

Wm. H. Hand, Jr.
Naval Architect
New Bedford, Mass.

HAND

DESIGNED Auxiliary 60-ft. Schooner

"Whistler," at the left, my own boat, is one of the sturdy auxiliary type which I believe is the ultimate craft for the man who enjoys real cruising along shore or on deep water.

I am building many new schooners, including a new and larger "Whistler," for next season. If you are interested I suggest you write me of your requirements.

NAVAL ARCHITECTS & YACHT BROKERS

JOHN G. ALDEN
YACHT BROKER AND NAVAL ARCHITECT
MARINE INSURANCE
148 State Street
BOSTON, MASS.

Thomas D. Bowes, M. E.
NAVAL ARCHITECT AND ENGINEER
Offices
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PHILADELPHIA, PA.

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Engineers and Naval Architects
Yacht Brokers
18 WILLIAM STREET, NEW YORK CITY
TELEPHONE 1375 BROAD

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NAVAL ARCHITECT
NEW BEDFORD, MASS.
HAND-V-BOTTOM DESIGNS
Send stamp for catalog illustrating forty-three typical Hand-V-Bottom designs.

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Sail or Power Yachts, Houseboats and Commercial Vessels
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NAVAL ARCHITECTS
SURVEYORS — YACHT BROKERS

CHARLES D. MOWER
Designer of
SENSIBLE CRUISERS
POWER—SAIL—AUXILIARY
Twenty-five years' practical experience
350 Madison Avenue New York City

The Way We Would Do It

(*Continued from page* 41)

does not mar the appearance of the boat. In case of grounding in shallow water this type of rudder is one of the first parts of the boat to suffer injury. If supported by a skeg this is apt to be bent forcing the rudder tightly against the hull rendering it inoperative. There are exceptions to these rules but the general tendency for the outboard rudder will seem to indicate that it is the more popular of the two types. If your boat will readily permit of the addition of an outboard rudder we believe you will find the change advisable.

* * *

I would like to install running water in my boat but lack sufficient space for a tank. The only available location is several feet over the engine in the engine room which is not used for anything and it seems that this space could be adapted. Could I support a tank here or do you think it would be impracticable? Could a tank of about 30 gallons capacity be installed in a 30-foot boat without making it top-heavy? The gravity system would be the simplest and I would prefer to use this rather than force feed.—S. E. A., Bayside, L. I.

The installation of a water tank in the space which you describe is a relatively simple matter. This space which is not ordinarily used can be adapted to carry the tank with little work. It is simply necessary to take a tank of the required capacity and build it into a suitable frame of oak or pine strips. These can be supported on stanchions, about two inches square, which are fastened to the engine foundation or floor and to the deck carlins. A filler pipe runs through the deck and the outlet is piped to the galley sink or where the water is needed. A cut-off spigot is located close to the tank and a drain should also be provided for use in the winter. The clear space underneath the tank and between the stanchions forms a convenient place to locate the dry batteries and ignition coil. This will require shorter wires than otherwise which is an advantage. If a rectangular tank is used it should be provided with baffle plates to prevent the water from splashing around when the boat is at anchor.

Duplicate Strainers

(*Continued from page* 29)

Brass and copper tubing can be secured in sizes ranging from ⅛ inch to ⅜ inch outside diameter and being flexible can be fitted with less trouble and expense than with regular brass pipe which will require elbows at the turns while tubing can be bent on easy curves. The well-known compression coupling can be used or brazing couplings which are perhaps more secure. These connections are made in all necessary forms. They can be had with tubing connections at both ends or with tubing connection at one end and iron pipe thread at the other fitting brass pipe in sizes ⅛ inch to ⅜ inch.

The arrangement of double strainers is much better than one strainer on each tank as in case only one tank has gas and its strainer stops up, a shut down is necessary and anyone who has had this experience in a good sea don't care for it again. With this set up of strainers, in case one gives trouble, simply throwing the upper and lower three-way valves over puts the other strainer in commission and the plugged one can be cleaned.

If brass pipe is used, use shellac, or even hard soap will do on the threads. If preferred needle valves can be secured instead of ground key stop cocks.

—D. E. W., Seneca Falls, N. Y.

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FREDERIC S. NOCK
NAVAL ARCHITECT
Yacht Builder, Marine Railways, Storage and Repairs
East Greenwich, Rhode Island, U. S. A.

What do you want—What have you?
C. S. SPONAGLE
Yacht Brokerage and Insurance
Commercial Boats
Competent Crews Furnished
88 Broad Street Boston, Mass.

Boat Headquarters in Baltimore
For quick action list your boat with us.
STALEY'S YACHT AGENCY
Yacht and Ship Brokers
106 N. Charles St., Baltimore, Md.

STRONG & BEEKMAN
Yacht and Ship Brokers
29 Broadway New York
Yachts — All Types, Sale or Charter
Also Commercial Vessels
Tel.: Whitehall 537 Cable: "Strobick"

110-Ft. Yacht "CONSUELO"
Sixteen Years Designing Experience
Specialty Seagoing Yachts
J. MURRAY WATTS, N. A.
136 South Fourth St. Philadelphia
Phone: Lombard 2072

Make Money With JOYMOTOR

There's big money in it for the engine agent or marine supplies dealer who handles the new model 7 JOYMOTOR. It is light, powerful, simple, well designed and well made—high grade in every respect. Sells on sight.

Quality construction makes JOYMOTOR the ideal rowboat motor. Flywheel Magneto. Reversing Propeller or Direct Steering models. Salt water fittings. Aluminum Piston. Electric Welded Gears. Easy starting, smooth running, flexible in speed control and free from vibration. Thoroughly guaranteed.

Write today for full description, prices and dealer's proposition. Don't buy any outboard motor until you know all about JOYMOTOR. Address Dept. "G"

JOYMOTOR MFG. CO.
1414 So. Michigan Ave., Chicago, Ill.

GREYHOUND
Owner, Edsel B. Ford, Detroit
Designed by Tams, Le Moine & Crane
58' x 10' 6" x 3' 6". Speed 26 M.P.H.

Why Waste FUEL and SPACE

Both boats shown were formerly powered with twin screw eight cylinder marine motors 5½-inch bore.

Twin screw six cylinder HALL-SCOTT marine engines replaced the former power plants — RESULTS — Equal speed for Greyhound—More speed for Myrno II—Fuel bills cut one-third—Vibrationless operation — 90 percent less motor trouble — More usable space in engine room—Less draft—Low speed control improved 100 percent.

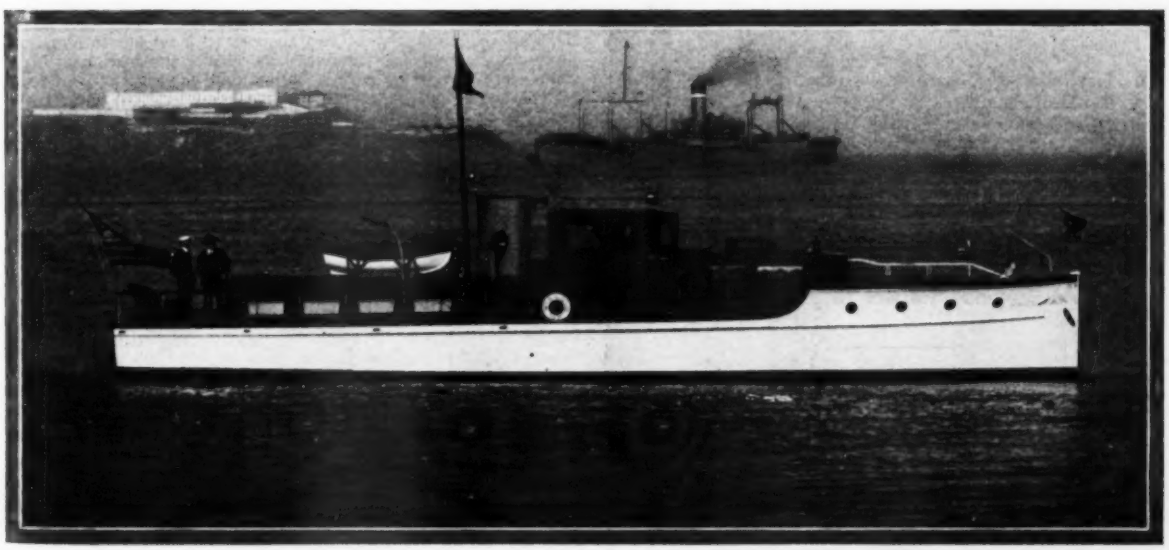
HALL-SCOTT'S have and are making good in fast cruisers and runabouts because we have an organization and factory capable of producing BETTER marine engines in design—material and workmanship.

Built in two sizes only.
4 cylinder 125 H.P. weight 1100 lbs. 6 cylinder 200 H.P. weight 1300 lbs.
Single and twin screw plants in stock at

HALL-SCOTT MOTOR CAR CO. INC.

Eastern Sales & Service Branch, 266 Main St., Buffalo, N. Y.
Factory Berkeley, California.

MYRNO II
Owner, Norman De Vaux, San Francisco. 62' x 11'x3' 6". Speed 25 M.P.H.



Rebuilt Engines

All Guaranteed in Good Running Condition

1 R.H. and 1 L.H. 5¾" bore, 7" stroke, Wisconsin marine motors. Complete with ignition, carburetion, and Seabury reverse gears.
Price—$5,000 for the pair.

1 R.H. and I L.H. 3-cylinder 7½" bore, 9" stroke, Automatic heavy duty motors. Complete with propeller shafts, propellers, and propeller equipment.
Price—$850 each or $1,700 for the pair.

1 R.H. and 1 L.H. 8-cylinder 6¾ x 7¾ Duesenberg high speed marine motors. These motors are complete with standard equipment.
Price—$5,000 for the pair.

1 R.H. and 1 L.H. 8-cylinder Model F-300 Sterling engines. Complete with standard equipment.
Price—$3,500 each.

1 4-cylinder 28 H.P. Clifton marine engine. Equipped with imported Bosch magneto.
Price with standard equipment—$1,000.

1 50-Light Murray & Tregurtha direct connected set.
Price—$250.

1 Model F M 8-cylinder 5½ x 6¾ Sterling engine. New. Has Bosch electrical and ignition equipment. Engine complete with propeller equipment.
Price—$2,500.

1 R.H. and 1 L.H. 6-cylinder 6½" bore, 8" stroke, open base Murray & Tregurtha engines.
Price—$3,000 each.

1 Model F-4 4-cylinder 7½" x 10" heavy duty M. & T. engine.
Price—$2,500.

1 4-cylinder 6½" bore, 9" stroke, old style 20 H.P. M. & T. engine.
Price—$700.

1 R.H. and 1 L.H. 4-cylinder 6½ x 8 Model E-4 M. & T. engines.
Price—$1,400 each.

1 4-cylinder 8½" bore, 11" stroke, 60-80 H.P. M. & T. rebuilt engine.
Price—$3,000.

1 Universal 37 Ampere direct connected light set.
Price—$250.

1 Herreshoff steam plant.
Price—$2,800.

All Engines Subject to Prior Sale

MURRAY & TREGURTHA CORPORATION

Atlantic Massachusetts

Racing Program for 1921 Promises Action

(*Continued from page* 40)

Miss Toronto must again prove her superiority in the Peoria Regatta.

One of the surprises which is to be sprung on the class in which many four-barreled Hall-Scott motors are to participate on the Fourth is likely to be sprung by the Bartholomew-Bryant duo, with their new B and B. This craft is a roomy eighteen-foot hydro, of the Miss Peoria type. Her eight-cylindered Thomas motor looks small in the beamy hull, but the pushing power is unquestionably there and right now a solemn warning is issued to anyone who thinks this boat isn't going to travel some when the time comes.

CRUISER CHAMPIONSHIP CONDITIONS

The New York Athletic Club, American Power-Boat Association Handicap Cruiser Championship of America on August 6th will be run under the following conditions: It will be open to cruisers as defined by Rule VI. Division 1, of less than 45 and more than 30 feet load waterline, owned by a member of the club enrolled in the American Power-Boat Association.

COURSE—From starting line to Derring Harbor, Shelter Island, New York, leaving Long Beach Red Spar Buoy No. 2 on the starboard hand and Hay Beach Point Bell Buoy on port hand—a distance of approximately eighty nautical miles.

MEASUREMENT—Rule V, 1921, A. P. B. A. rules.

All competing boats must be measured by the official measurer of the A. P. B. A., or one of the assistant measurers, and certificates must bear date of current year. Note: Measurers or owners will not specify R. P. M. Revolutions will be calculated according to paragraph D, 1921, A. P. B. A. rules, which reads as follows:

The local Race Committee shall request each owner to name an observer to take the actual revolutions of the motor during the race. In case no observer is named by any owner, the local committee shall name one for that owner. The local committee shall locate these observers on the boats during the race, determining by lot as to which boat each observer shall be placed on, but so placing them that no observer is on the boat of the owner naming him. It shall be the duty of the observer to take actual revolutions of the motor during the race with an approved revolution counter at 15-minute intervals or at such intervals as the local Race Committee may specify and report same to the local Race Committee immediately after the boat finishes. The maximum revolutions so reported shall be used as the basis for calculating the horsepower of the motor mentioned in Section 5—Rule V. Note: When Method D is employed it will be necessary to calculate the time allowances after the boats have finished.

When following Method C or D, local Race Committee must use their judgment as to the selection of the proper maximum number of revolutions and give due attention to abnormal conditions of weather, sea, etc.

Draft measurements specified on the written certificates will be checked by a measurer appointed by the Race Committee within twenty-four hours of the starting time. Owners must put their boats at the disposal of the Race Committee for this purpose.

EQUIPMENT—All boats must be fully equipped for cruising and in addition to the equipment required by the American Power Boat Association Racing Rule, must carry cushions, blankets, ice box, compass, two anchors with twenty fathoms of cable each, provisions for five days, charts and lead line. All equipment must be of such a nature and quantity as would be carried by a boat in actual cruising trim for the number of crew on board in the race. Competing boats must carry a suitable tender.

POWER AND FUEL—Explosive engine or engines operated by either gasoline, kerosene, alcohol or producer gas. No ingredient to increase the power of fuel permitted. (Use of sails prohibited.) All gasoline must be carried in fixed tanks permanently piped and a sufficient quantity to cover 125 per cent. of the course.

INSPECTION—Boats must report at N. Y. A. C. Yacht House, Travers Island, before 5 P. M. on the day previous to the race for inspection.

PRIZES—The New York Athletic Club has presented a Perpetual Challenge Trophy for yearly competition under a Deed of Gift, to be held for one year by the Club whose representative wins the race and individual prizes as follows: First Prize, Second Prize, if five start; Third Prize, if seven start, and Time Prize for boat making best elapsed time. An A. P. B. A. record certificate will be presented to the boat making the best corrected time.

ENTRIES—Close July 27, at which time measurement certificate must be received and should be sent to E. H. Tucker, Chairman Regatta Committee, 110 William Street, New York City, with a copy to E. C. Headley, Chairman Racing Commission, 600 Bullitt Building, Philadelphia, Pa.

Advertising Index will be found on page 126

Just Worlds of Fun

Think of the fun in skimming about over river and lake—to that sandy bathing beach—those far-off "fishing grounds"—to your favorite picnic nooks, or just exploring shore lines and rivers, and never touching a hand to oars or paddles. You, too, can have all this fun if you clamp a

CAILLE 5 Speed Motor

to the stern of your rowboat or canoe. It attaches in a jiffy by simply turning two thumbscrews. Has five speeds. Will drive your boat at 7 to 10 miles an hour or at trolling speed. You can also back your boat fast or slow. Or, you can run up to a pier and stop the boat without stopping the motor. The Caille Five-Speed Motor starts with a starter—no cranking. Has magneto built into flywheel and water-cooled muffler on exhaust. Battery ignition if desired. It's the finest rowboat motor in the world—made of best materials throughout and fully guaranteed. Its little brother—the

Liberty Drive
ROWBOAT MOTOR

is of the same high quality but of different design, and does not embody some of its big brother's features. It, too, attaches to any rowboat in a jiffy. Motor pivots in an up-and-down and sidewise movement. Speed adjustments secured by revolving handle on steering lever. Pressing button on end of lever stops motor. Goes through weeds like an eel. Excellent in shallow water. Send for catalog describing both motors. Address us or nearest distributor.

The Caille Perfection Motor Co., 45 Caille Bldg., Detroit, Mich.

The Caille Five-Speed Motor—the "Rolls-Royce" of all rowboat motors

Dealers

There's a Caille rowboat motor to meet every purse. All are nationally advertised and well known. Handle them. Send for dealers' proposition.

G. H. Masten Co., 38 E. Ninth St., N.Y.
T. T. Burchfield Co.
604 Arch St., Philadelphia
Toledo Sales & Engine Co.
6 St. Clair St., Toledo
Gray Aldrich Co.
84 Atlantic Ave., Boston
Woodhouse-Schmits Engine Co.
62 Marion St., Seattle
Standard Supply & Hardware Co.
822 Tchoupitoulas St., New Orleans
Burroughs-McMeekin Co.
30 E. Bay St., Jacksonville, Fla.
Unger & Mahon
Pratt & Gay Sts., Baltimore, Md.
William Grossman
1630 Pine St., St. Louis
Perfection Motor Co.
380 St. James St., Montreal, Canada

CAILLE
Rowboat Motors

Model A4
Special
4-5 H.P.

Waterman Motors—
Known The World Over
This High Grade Power Unit is Offered at
Greatly Reduced Price
Write Promptly
For particulars and circulars
ARROW MOTOR & MACHINE CO
738 Frelinghuysen Ave., Newark, N. J.

ZUNDEL

A Satisfactory Stove
Burns Denatured Alcohol
For Boat or Camp Use:
Black Enamel Finish
Will Give Satisfaction
Width 20 in. Depth 15 in. Height to top of tank 9 in.
Price $17.50
R. W. ZUNDEL COMPANY, Inc.
47 Whitehall Street New York City
Phone Bowling Green 9157

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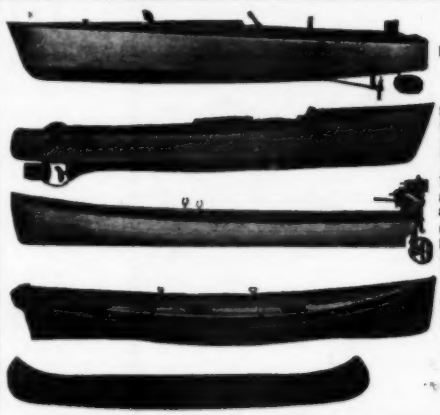
WIRELESS TELEPHONE *for* BOATS

Continuous, Sustained and Reliable word-of-mouth communication over distances up to 20 miles. Absolutely practical and now in successful operation. Easy to use; just talk! Write for full information on the new DeForest Type OT-10 Oscillion "Radiophone" Transmitter.

DEFOREST RADIO TELEPHONE & TELEGRAPH CO.,
1415 Sedgwick Ave., New York

BOAT SUPPLIES



Motor Boats, Row Boats, Hunting Boats, Fish Boats, and Canoes.
Special Boats for Outboard Motors, Motor Boats 16 to 24 ft. long. For lakes, rivers, shallow water and weeds.
Catalog Free. Save Money. Order by Mail. Please state what kind of boat you are interested in.
THOMPSON BROS. BOAT MFG. CO.
1907 Ellis Ave.
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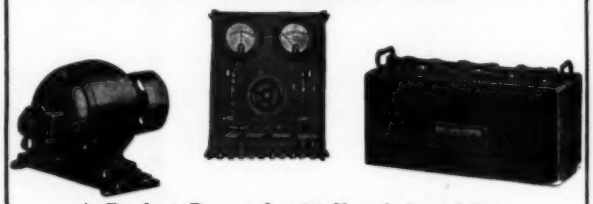
Albany BOATS

Express Cruisers de Luxe
Mahogany Fast Runabouts
Early delivery can be arranged on a few desirable boats.
Albany Boat Corporation
7th Street Watervliet, N. Y.

"DAYTON" LIGHTING AND IGNITION SYSTEMS.
6, 12, 32 VOLTS COMPLETE



A Product Proven by 20 Years' Actual Use.
Complete Catalogue Upon Request.
THE A-C ELEC. MFG. CO., DAYTON, OHIO

WOOLSEY COPPER PAINTS
***and* MARINE PAINT SPECIALTIES ARE THE WORLD'S STANDARDS**

Copper Paints—Brown, Red and Green, Yacht White, Deck Paint, Marine Mixed Paints, Metal Bottom Paint, Seam Paint, Seam Compounds, Sparon (Spar) Varnish, Engine Enamels, Canoe Enamels, Boat Bottom Seam Compound, Copper Bronze, Light Sea Green and Regatta Green Yacht Bottom Paints, etc.

C. A. WOOLSEY PAINT & COLOR CO.
Jersey City, N. J., U. S. A.

Send for our Marine Booklets, Free—Contain Color Spots and information "How to Paint a Boat."

Crockett's Spar Composition
is the only varnish
which will last
a season on
a deck

E. Z. VARNISH REMOVER
Film remains soft until removed

THE DAVID B. CROCKETT COMPANY
Bridgeport, Conn.
The Bissell Varnish Company, *Successor*

Advertising Index will be found on page 126

MARINE ELECTRICAL EQUIPMENTS

SHIPS TELEGRAPHS

SINCE 1845 WE HAVE BEEN DESIGNERS AND MANUFACTURERS OF COMMUNICATING AND SIGNALLING SYSTEMS FOR NAVAL AND MERCHANT VESSELS.

CORY ELECTRICAL AND MECHANICAL TELEGRAPHS AND LIGHTING EQUIPMENTS ARE THE RECOGNIZED STANDARDS.

CHAS. CORY & SON, Inc.

NEW YORK
183-187 Varick Street
Main Office and Factory

PHILADELPHIA
207 Market Street

SEATTLE
515 Hage Bldg.

SAN FRANCISCO
11 Mission Street

Improved Motor Boat Closet

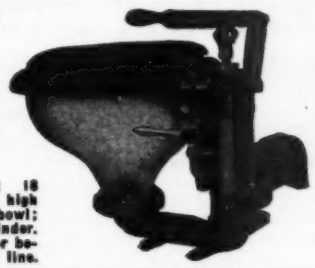


Figure 1404

Dimensions: 18 x 18 x 11" high to top of bowl; 2½" cylinder. For above or below water line.

The best little closet on the market today, possessing many of the advantages of the large size toilet. All brass and porcelain. Oak seat and cover.

All prices subject to market advances, which are continually changing.

THE J. H. CURTISS CO.

The J. H. Curtiss Co.
Pioneer Specialists in Marine Sanitary Fixtures

Since our advertisement appeared in the first issue of MoToR BoatinG, December, 1907, hundreds of Curtiss fixtures have been installed in motor cruisers and yachts of all sizes, including some of the finest boats launched within this period.

The Curtiss line is exceptionally complete, varied in type, size and price to meet every possible requirement. Each model has been designed in accordance with our wide experience in boat work and can be depended upon in quality, service and durability no matter whether it is our highest or lowest priced model.

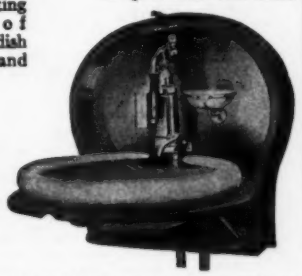
"PRICES ON APPLICATION"

With Pump

Cock on pump swings upward, thus preventing breaking of bowl. Soap-dish is porcelain and removable.

No. 5
Height, 19 in.
Width, 19 in.
Depth Closed, 6 inches.
Quartered Oak Case, or Mahogany Case.

Lining and Fixtures Nickel-plated. Porcelain Bowl. Mahogany or Quartered Oak Case.



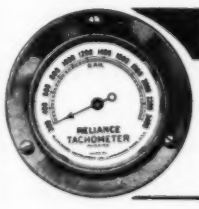
2 South Street, New York

PURDY BOAT COMPANY

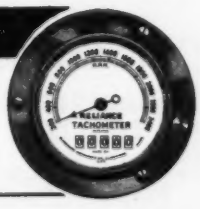
Designers and Builders of

EXPRESS CRUISERS

TRENTON MICHIGAN



RELIANCE TACHOMETERS



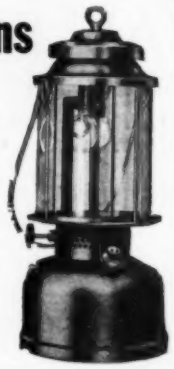
Various models to indicate speed from 50 to 3600 R.P.M.
Counter to record total revolutions for any desired period.
Your motor boat equipment is not complete without one.
Write for Bulletin
Blanchard Instrument Company, Cambridge 39, Mass.

Motor-boats Sailboats
"V" Bottom Hydroplanes
CABIN CRUISERS
of all types made from our plans or to your design. Let us tender on your new boat.

CANADIAN BOATS
Can be laid down in U. S. cheaper than U. S. boats of the same quality and workmanship. Write for our Catalogue.
WALTER DEAN CANOE & BOAT CO., Ltd.
"Boat-builders since 1888"
TORONTO CANADA

Storm Proof Lanterns

400 Candle Power



also standing, hanging and wall lamps. Burn common gasoline—about 1/50th gallon per hour. Lighted instantly. Absolutely safe, clean, odorless and economical. 10 to 100 times the illumination of ordinary lights.

The ideal light for yachtsmen, motor boats, work boats, yacht clubs, summer homes, etc.

Write today for catalog and special prices.

Agents Wanted

THE AKRON LAMP CO.
116 Lamp Bldg. Akron, Ohio

DEVOE
PAINT and VARNISH
Products

Devoe makes a paint or varnish for every fresh water or salt water boating need. Established 1754

DON'T BUY A BOAT
TILL YOU SEE THE
CAPE COD 20-FT. DORY LAUNCH

The Safest Little Family Boat Built. Motor Housed In.
Other Standardized Cape Cod Boats

17′ Sail Dory	14′ Outboard Motor
16′ Shallow Draft	10′ Row Boat
17′ Life Saving Dory	12′ Row Boat

Write for Prices.

CAPE COD SHIPBUILDING CORPORATION

Successors to Cape Cod Power Dory Co.
Builders of craft to 150′ length, or 10′ draft.

Winter Storage.
Main Office and Works, 367 Main Street, Wareham, Mass.
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SEABRIGHT DORY CRUISERS

The most seaworthy motor cruisers of their size ever built. If you want real pleasure at the lowest cost and with the utmost safety you should own one of these famous Seabright boats. We also build Work Boats, Ship Tenders, Life Boats, Surf Boats, etc.

Write today for prices

THE BANFIELD BOAT AND LAUNCH WORKS
Office and Works:
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Write Us for Quotations

on any marine supplies or specialties you want—one or one hundred, any article or any quantity. We don't issue a mail order catalog because conditions, stocks and prices change too frequently these days—but we are here to give you intelligent service, prompt attention and honest prices on whatever you want.

Write us today

Anything for boat or ship, large or small.
Honest Goods at Honest Prices.

BOSTON MARINE HARDWARE CO
259 Atlantic Ave., Boston, Mass.

ONE WAY ONLY—THE BEST WAY—BUY!

We Sell Our Sets

Wireless for Ship *and* Land Stations

CUTTING & WASHINGTON RADIO CORPORATION
GENERAL OFFICES
6 and 8 West 48th Street, New York, N. Y.

You Can Build Your Own Boat

and save 2/3 the cost
By the BROOKS K. D. SYSTEM

Brooks Boats are handsome, seaworthy, up-to-date in design and easy to build. We also build complete boats.

The Brooks Guarantee:
Your Money Back if You Are Not Satisfied
Send 10c for 64-page catalogue showing all models.

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The Barker Motor

(Two-Cycle)

"Have run my Barker Motor thirty thousand miles in ten years and it is good for ten years more."—Name on request.

Built for long service
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In New York:
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The BARKER FACTORY
Norwalk Conn.

Write for Barker's "Red Letter" Book of Motors

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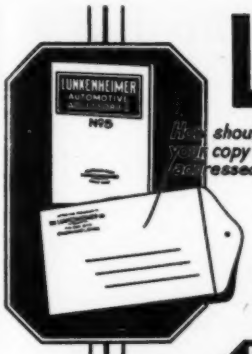


LUNKENHEIMER Automotive Accessories

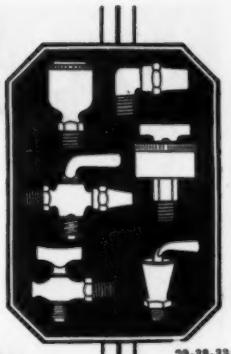
GROUND KEY COCKS, NEEDLE & CHECK VALVES, GASOLINE STRAINERS AND PRIMING CUPS

THE LUNKENHEIMER CO. "QUALITY" LARGEST MANUFACTURERS OF HIGH GRADE ENGINEERING SPECIALTIES IN THE WORLD

NEW YORK CHICAGO CINCINNATI BOSTON LONDON

WRITE FOR CATALOG NO. 8

LUBRICATORS, SIGHT-FEEDS, OIL AND GREASE CUPS, TUBING UNIONS, FITTINGS ETC.



RELIABILITY-ECONOMY-SERVICE

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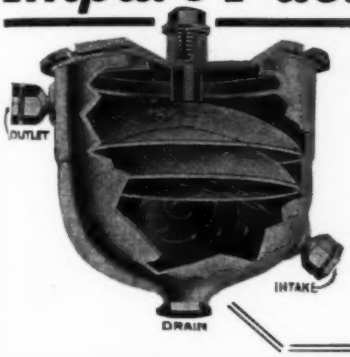
Impure Fuel Due to Water! KLEENGAS PURIFIER



Fully 90% of your carburetor trouble is caused by water and dirt in your fuel. You can prevent this trouble entirely with a KLEENGAS PURIFIER.

You can't prevent water from collecting in your fuel tank and line—it condenses from damp atmosphere as well as the water in the gas or kerosene you buy. You can't prevent sediment, dirt, fluff, rust, impurities—some scales off the tank lining—some comes in the gasoline itself. But you can prevent all the troubles caused by these impurities.

KLEENGAS is a high grade PURIFIER scientifically designed, simple in construction and made of the best non-corrosive materials. Aluminum bowl, double parabolic fine mesh bronze screens, brass drain tap at bottom. It cleans itself by the swirling motion, the impurities dropping down so they don't clog the screen. Large capacity allows full gas flow and requires only occasional draining.

Order a KLEENGAS today—$10.00 postpaid. Money cheerfully refunded if not as guaranteed. Hundreds in use. Easily installed—no soldering.

Excellent proposition for distributors and dealers—write

THE NATIONAL AUTOMOTIVE MFG. CO.

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DECK CANVAS-ALL WIDTHS

YACHT SAILS-AWNINGS-SPRAY HOODS-Etc.

522 So. Delaware Ave Philadelphia — GEO. R. BURROWS. Inc. — 2 South St New York

SAL SPEEDOMETER for MOTOR and SAIL YACHTS

IS THE ONLY KNOWN DEVICE FOR DETERMINING THE EXACT SPEED OF ANY BOAT. ASK FOR INFORMATION

HAMILTON & HANSELL, Inc., 13 Park Row, N. Y. City

P. H. Gill & Sons Forge and Machine Works, Brooklyn, N. Y.

FINISHED CRANK SHAFTS

We are furnishing them to some of the leading marine engine builders. Carbon and Alloy Steel, Heat Treated to your own specifications. We grind all Pins and Bearings. Forged, machined, and finished complete in our own plant. Let us quote you.

Yacht Construction — *Repairs, Outfitting, Storage*

PORT JEFFERSON MARINE RAILWAY CO.

PORT JEFFERSON, N. Y.

Large Railway 1000 tons cap'y, 15 feet draft.
Small Railway 300 tons cap'y, 10 feet draft.

Gasoline, water, yacht supplies — *Excellent harbor, all facilities*

McMILLAN YACHT BLOCKS

Lignumvitae and Ash
Highly finished

All style fittings

Made in small and large sizes

Refer to Dept. Y

W. H. McMillan's Sons

153 South St. New York — 40 Penn St. Brooklyn, N. Y.

GENERAL LIGHTNING CUT PISTON RINGS

(1) The Lightning Cut
(2) The Wandering Oil Groove

will absolutely give you equa-radial pressure on your cylinder wall, obviate the loss of compression, and maintain the roundness of your cylinder.

The Wandering Oil Groove not only lubricates the cylinder wall, but effectively lubricates the ring itself, retaining the resiliency of the metal and avoiding friction.

General Lightning Cut Rings are guaranteed to give the best possible results. Properly fitted and used, they will effect economy in many ways. ***Write us for further information***

GENERAL UTILITY CO., *Manufacturers*
1326-28-30 Ogden Street, Philadelphia

NJM

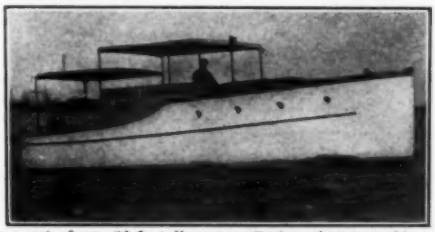
The NJM is the improved Ford marine. It consists of four different models of the same size motor.

Cylinders 3¾ x 4 cast in block, head separate. Ignition—Splitdorf high tension with impulse starter. Lubrication — semi-force feed. Reverse Gear—Carlyle Johnson. Carburetor—Miller. Open flywheel type, cast iron base suitable for fishing boats, small work boats and cruisers up to 30 ft. in length.

$435.00 F.O.B. Keyport, N. J. Write for literature.

NEW JERSEY MOTOR SALES COMPANY
KEYPORT, NEW JERSEY, U. S. A.

HARRISON Standardized Boats

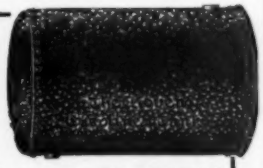


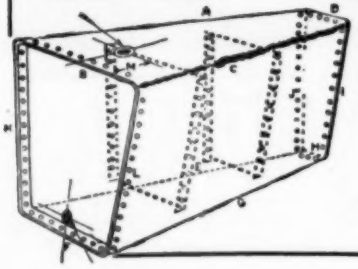
This is a cut of our 32-foot V-bottom Cruiser that is making such a Hit. A truly wonderful Craft. We build "Boats of Quality" at moderate prices.

32-foot Cruiser, 40 H.P. Price including tax	$4,950.00
20-foot Runabout, 20 H.P. Price including tax	1,500.00
10-foot Yacht Tender. Price including tax	125.00
16-foot Outboard Rowboat. Price including tax	85.00

R. W. HARRISON BOAT WORKS
"Established 1897" Bay View Park, Toledo, Ohio

Gasoline Tanks, Air Whistle Tanks, Mufflers, Stacks, Special Plate and Sheet Metal Work for Pleasure Boats.





L. O. KOVEN & BROTHER

Main Office,
158 Ogden Ave., Jersey City, N. J.

Branch, 50 Cliff St., New York City.

HESS MONO-MARINE

A High Grade Single Cylinder Four Cycle Engine of 4-5 H.P.

The ideal engine for your tender, fishing boat or other craft up to 30 ft., and on larger boats for operating generators for lighting plant or wireless outfit.

Many parts interchangeable with standard Ford engine parts, carried in stock by dealers the world over. This includes timing gears, valves, valve springs, connecting rod, piston, etc. Dual ignition.

Furnished complete with Hot-Spot Manifold, High Tension Magneto, Carburetor, Timer, Spark Coil and Switch.

WRITE TODAY FOR CATALOG

We have an excellent money making proposition for agents and dealers

HESS MOTOR COMPANY
1430 Sherman Street **Detroit, Michigan**
Exclusive Export Sales Dept., W. D. Blood & Co., 44 Whitehall St., New York, N. Y.

"LIBERTY KID"

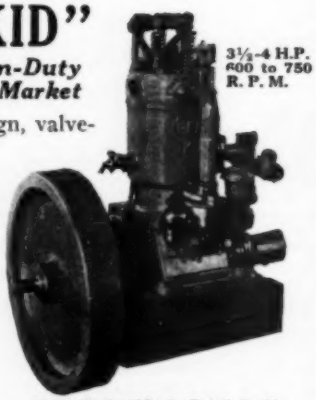
The Best Little Medium-Duty Marine Engine on the Market

High grade four cycle design, valve-in-head, removable cylinder head, bronze rocker arms, push-rods, plunger pump, etc. Over 200 in actual use.

Immediate deliveries on early orders. Write for catalog and testimonials.

AGENTS AND DEALERS WANTED

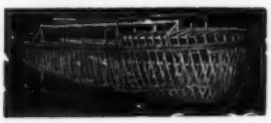
A. G. HEBGEN
Manufacturer and Sole Distributor
440 Market St., San Francisco, Cal.



3½-4 H.P. 600 to 750 R. P. M.

Also built in "Liberty Twin" Double Cylinder Model giving 8-10 H.P., for gasoline or kerosene

Build Your Own Boat



—cruiser, work boat, open launch or row-boat — from our knock-down frames or patterns.

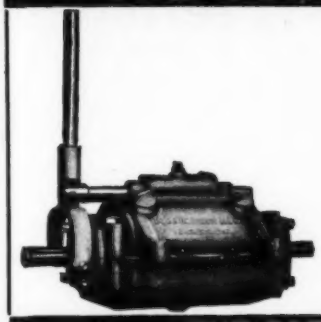
Save ½ to ¾ the Cost.

Send for Catalog and Tell Us Your Requirements.

DEFOE BOAT & MOTOR WORKS
3220 State Street **Bay City, Mich.**

Advertising Index will be found on page 126

THE JOHNSON MARINE REVERSE GEAR



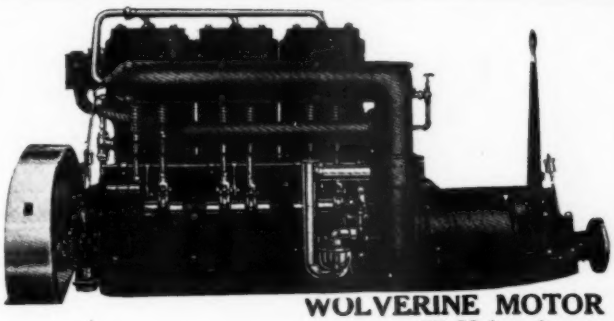
The Four Exclusive Johnson Features

Johnson Friction Clutches
Alloy Steel Gears and Shafts
Ball Bearings
Completely enclosed design

Our formula for smooth operation, economy of power, and long, unfailing service.

Write Department 25 for our Catalog

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN



"WOLVERINE"

The Motor with the Bore and Stroke
HEAVY DUTY MARINE ENGINES

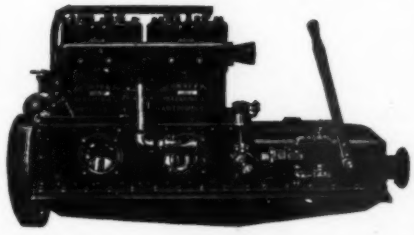
KEROSENE { **Used successfully for 15 years.** / **Device built into engine.**

WOLVERINE MOTOR WORKS
33 Union Avenue
Bridgeport, Conn., U. S. A.

(Formerly Grand Rapids, Mich.)

Catalogue No. 113 gives full information

GRAY-PRIOR
FOUR CYCLE MARINE MOTORS
Built up to a Standard—not down to a price

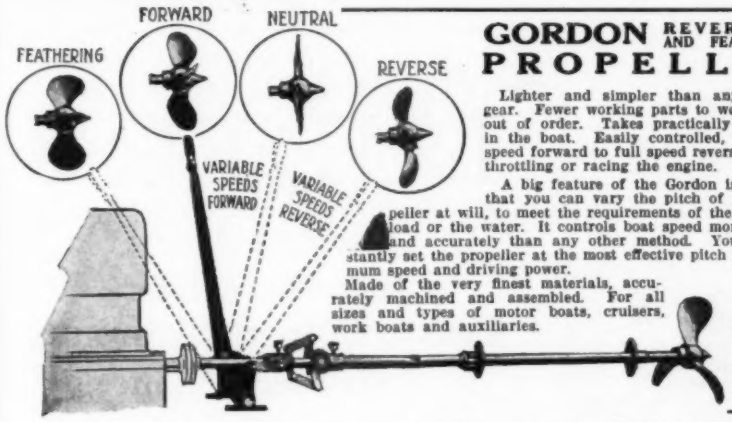


A Clean-Cut Power Plant
For Commercial Boats and Cruisers

Model D-4, Medium Heavy Duty
36 Horse Power Bore, 4½ inches Stroke, 5 inches

Write today for full description and prices

THE GRAY & PRIOR MACHINE COMPANY
56 Suffield Street Hartford, Conn., U. S. A.

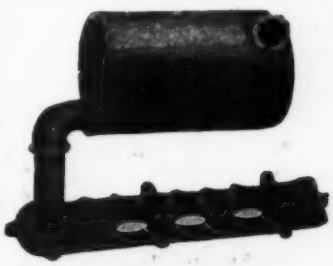


GORDON REVERSIBLE AND FEATHERING PROPELLER

Lighter and simpler than any reverse gear. Fewer working parts to wear or get out of order. Takes practically no room in the boat. Easily controlled, from full speed forward to full speed reverse without throttling or racing the engine.

A big feature of the Gordon is the fact that you can vary the pitch of your propeller at will, to meet the requirements of the boat, the load or the water. It controls boat speed more quickly and accurately than any other method. You can instantly set the propeller at the most effective pitch for maximum speed and driving power.

Made of the very finest materials, accurately machined and assembled. For all sizes and types of motor boats, cruisers, work boats and auxiliaries.

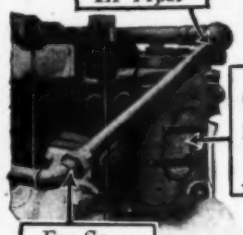


Write today for catalog and prices.

SILENCER and UNDERWATER EXHAUST
Complete Outfit, $12.00 F. O. B. Cleveland

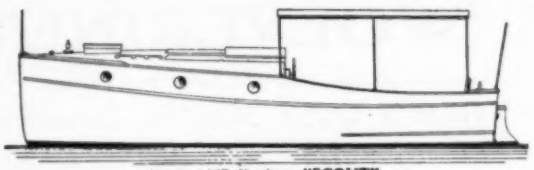
THE GORDON PROPELLER & MFG. CO.
9001 Desmond Ave. Cleveland, Ohio, U. S. A.

SMOOTH-ON



Ever think of what might happen while on a Cruise?
Be prepared to meet emergencies—be sure to always have a can of Smooth-On Iron Cement on board for quick, economical and lasting repairs.
Smooth-On has many uses around motor boats, etc.—send for our Motor and Home Repair Booklet No. 262, illustrating and describing numerous repairs that can be made with Smooth-On. It's FREE—Write for it.
Sold by Supply Houses
Smooth-On Mfg. Co.
Jersey City, N. J.

Peerless
New High Speed—Light Weight
The product of experience and development in actual boat service. Extremely light weight is secured by employing special castings and alloy steels throughout.
Bore 5". Stroke 7". Speed 1650 R.P.M.
4 cyl. 125 H.P..... 700 lbs.
8 cyl. 250 H.P..... 900 lbs.
12 cyl. 400 H.P.....1100 lbs.
Peerless Marine Motor Co.
2160 Niagara St. Buffalo, N. Y.



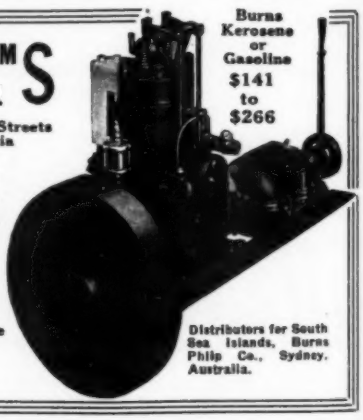
40 x 8'6" Cruiser "SCOUT"

The most for the money on the market today. Large cockpit, roomy cabin with toilet, galley and berths for four. Full headroom. Four cycle motor, speed 9-10 miles, fully equipped for cruising, $2500.00.
We have a large number of models in both Runabout and Cruisers from which we furnish K D frames to complete outfits. We gladly quote on your requirements.
RICHARDSON BOAT CO.
370 Sweeney St., No. Tonawanda, N. Y.

ESSENTIALLY a quality product, furnishes its user with an ideal socket wrench — one that will get into the most difficult corners and with its great strength and flexibility yank loose the most stubborn bolt or nut on any boat.
Let us send you data on our special Dealers' proposition. Fully guaranteed.
ROBINSON EQUIPMENT CO.
Waltham, Mass.
BET-R-BILT SOCKET WRENCH

OLOMEL
A Superior Oil and Water Stop Better and Cheaper than Red Lead
Used by Consolidated Shipbuilding Corp., on the
YACHT "LYNDONIA"
also on U. S. Destroyers, and by leading shipyards. Supplied in three forms—Olomel Solution, Olomel Compound and Olomel Putty. We also manufacture Bitumel, Electrimel, Bituminous Enamel, Oxide Iron Paint, Copper Paint, Non-Corrosive Paint, Acid Resisting Paint, Etc.
Write today for full information and prices.
OLOMEL MFG. CO., 18th & HAMPSHIRE STS. SAN FRANCISCO, CALIF.

MAYNARD-ADAMS ENGINE CO.
Eighth and Delaware Streets
Berkeley, California
A high grade 3½ H.P. 4-cycle power plant. Ford replacements.
Eastern Agent
H. A. Westerman, Riverhead, N. Y.
Menge Marine Hardware & Supply Co., New Orleans.
Other agents wanted.



Burns Kerosene or Gasoline $141 to $266
Distributors for South Sea Islands, Burns Philp Co., Sydney, Australia.

MASTER REVERSE GEARS
Strictly high quality reverse gears. Multiple disc clutch, nickel steel shaft and gears, hardened and ground, with bronze bushings working on hardened steel pins. Aluminum case saves weight.
Four sizes transmitting 12, 25, 50 and 85 H.P. respectively per 1000 R.P.M.
Write today for prices.
MASTER MOTOR CO.
19 Price Ave.
Lockport, N. Y.

Built by LUDERS
The Last Word in Yacht Designing and Building
Luders Marine Construction Company
Stamford, Conn.

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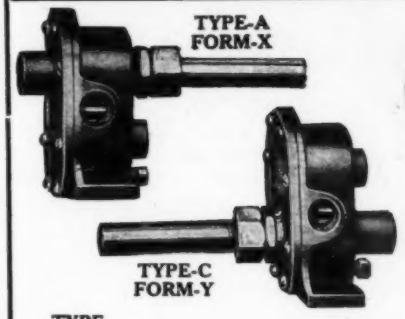
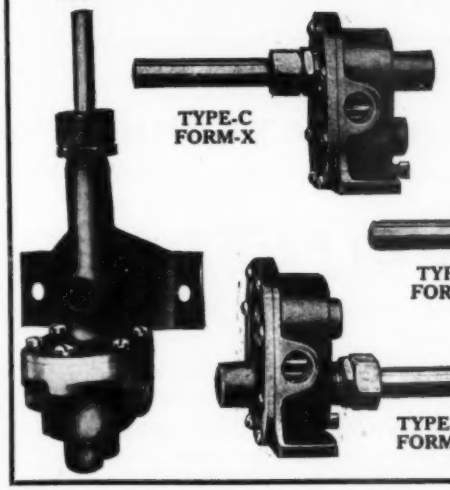


Oberdorfer Pumps



The finest power plant made will not operate properly if it is equipped with an inferior pump, whether it supplies water, fuel or oil.

OBERDORFER BRONZE GEARED PUMPS

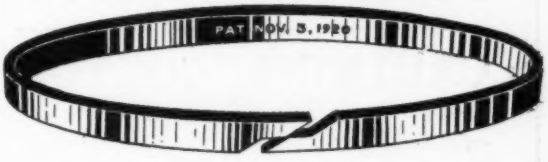
are built especially for marine use—they are made to withstand the hard service encountered in use on board boat—*Oberdorfer Bronze Geared Pumps* are noiseless, automatic, compact and reliable. The supply of water, fuel or oil is governed entirely by the motor—*there is never an over or under supply.* If you have ever had trouble with your pump you will find a world of satisfaction in the trouble-proof Oberdorfer.

If you own a boat powered with an internal combustion engine you will be interested in our new book on pumps. Your copy is ready for you—it comes *free* on your request.

M. L. OBERDORFER BRASS CO., 812 E. Water St., Syracuse, N. Y.

Get All the Power You Are Paying For

Power that leaks past worn piston rings costs you real money. Treat your motor to a set of HI-SPEEDS and save that wasted power. Piston rings are intended to take the wear as well as to hold compression. They must be replaced occasionally—at least every other season,—better every season, if you want maximum power and minimum fuel consumption.



HI-SPEED Piston Rings *Pay Their Way*

HI-SPEEDS are the simplest improved piston rings made. They combine the advantages of step cut and diagonal cut rings. The step cut makes them gas-tight for the life of the ring. The diagonal cut causes the ring to travel slowly in the groove. These rings retain their efficiency and wear longer than any other known ring. The simplicity keeps the cost down.

HI-SPEED Piston Rings are individually cast of high grade special formula grey iron, assuring flexibility with permanent and equal tension. They are ground to microscopic accuracy of .001 of an inch. There are no small parts to break or slip out of place and score the cylinder. Put a set of HI-SPEED Rings in your motor *now.*

HI-SPEED PISTON RINGS are carried in stock by all branches of L. Lawrence & Co.

L. LAWRENCE & CO. **Established 1862** **292 Halsey Street, Newark, N. J.**

Owners of the Lawrence Patent Process for repairing scored cylinders without regrinding. Scores are filled with silver nickel alloy, refinished like new and work is guaranteed for the life of the motor. Write today for quotations if you have a scored cylinder or cracked water jacket.

TRADE LAWRENCE MARK

LAWRENCE SERVICE PLANTS

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Chicago—1522 Michigan Ave.
Cleveland—6529 Euclid Ave.
Detroit—85 Meldrum Ave.
Los Angeles—1030 S. Grand Ave.
Milwaukee—18 Martin St.
Minneapolis—14 N. 9th St.
Newark—292 Halsey Street
New York—355 W. 37th St.
Philadelphia—1601 Summer St.
Pittsburgh—5102 Baum Blvd.
San Francisco—116 Hyde St.

LICENSEES NEARLY EVERYWHERE

A few good territories for licensees still open. Inquire at our License and Home Office, 292 Halsey St., Newark, N. J. Infringers will be prosecuted to the full extent of the law.

TOPPAN—*1898 to 1921*

and every year between has found Toppan Boats leading their respective fields. Power,—sail—and rowboats of many popular sizes,—each the most practical and seaworthy boat of its type, *each the best value at its price.*

Outboard Motor Boats

A special design that is entirely free from motor vibration and does not "squat" when under way. The safest and staunchest boat of its type. Sizes from 15 to 20 feet in length. ***Write today for catalog.***

TOPPAN BOAT MFG. CO.

Medford *Dept. G* Mass.

B. Schellenberg & Sons

EVERYTHING FOR THE PERSON OF THE YACHTSMAN, HIS OFFICERS AND HIS CREW

Clubs, yacht owners, commercial boat owners, should take advantage of our many years' experience in outfitting the mariner, both inland and deep sea.

Crews and Club Attendants furnished without Charge.

B. SCHELLENBERG & SONS
99 to 105 Myrtle Ave., near Bridge St.
Brooklyn, N. Y.

Socony gasoline has the low boiling point which insures utmost power and mileage. Its quality is always dependable—every gallon the same, and obtainable everywhere throughout New York and New England.

STANDARD OIL COMPANY OF NEW YORK

WE SELL SO SOCONY MOTOR GASOLINE NY STANDARD OIL CO OF NY

The sign of a reliable dealer and the world's best Gasoline

SOCONY MOTOR GASOLINE *Every Gallon the Same*

Your next boat

will be a stanch, long-lived craft if she is planked with

IDENTIFY THE GENUINE — "TIDE WATER" CYPRESS "THE WOOD ETERNAL" — YOU'LL FIND THE "ARROW"

BY THIS TRADE MARK — ON THE ENDS OF ALL BOARDS

CYPRESS has rot-resisting characteristics which make a Cypress boat a long-lived and *safe* boat. Get the *facts* in VOL. 19 of THE CYPRESS POCKET LIBRARY, "CYPRESS FOR BOATS and CANOES." Sent FREE with our compliments.

MANUFACTURERS: WRITE FOR INTERESTING DETAILS

Southern Cypress Manufacturers' Assn.
1317 Perdido Building, New Orleans, La., or
1317 Heard National Bank Bldg., Jacksonville, Fla.

STRATFORD OAKUM
—AND—
CAULKING COTTON

meet all U. S. Government specifications and receive the highest classifications of American Bureau of Shipping and Lloyds Register of Shipping.

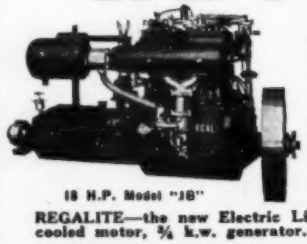
YACHT DEPARTMENT
George Stratford Oakum Co., Jersey City, N. J.

Rochester 40 Foot Enclosed Bridge Cruiser

High grade cruisers in standard sizes: 36-40-45-50 and 55 feet with either open or enclosed bridge deck.

ROCHESTER BOAT WORKS, Inc.
10 Charlotte Station **Rochester, N. Y.**

Twenty Years on the Market
REGAL
—FOUR CYCLE— MARINE ENGINES



18 H.P. Model "JB"

Built for commercial or pleasure boats. Sizes 2 H.P. —weight 125 lbs. to 50 H.P. —weight 5000 lbs. One to four cylinders. Use gasoline, kerosene or distillate for fuel. Easy to start and may be throttled to a very slow speed.

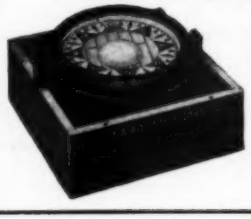
REGALITE—the new Electric Lighting Plant, 2 h.p. air cooled motor, ¾ k.w. generator. Write for information.

REGAL GASOLINE ENGINE CO.
74 West Pearl Street **COLDWATER, MICH.**

The Compass For Your Boat

should be the best obtainable. For seventy years Ritchie compasses have been the choice of experienced navigators.

Select the Ritchie for your boat.



Our catalog will show you the one best suited for your needs. Send for a copy today.

E. S. RITCHIE & SONS
Established 1850
110 Cypress Street
Brookline, Mass.

Advertising Index will be found on page 126

Syracuse Reverse Gear

SURE SAFE SILENT

THE SYRACUSE Reverse Gear is a compact unit combining the reversing mechanism, clutch and rear starter.

It is noiseless, clean, free-acting and as completely trouble-proof as the most advanced engineering practices can make it.

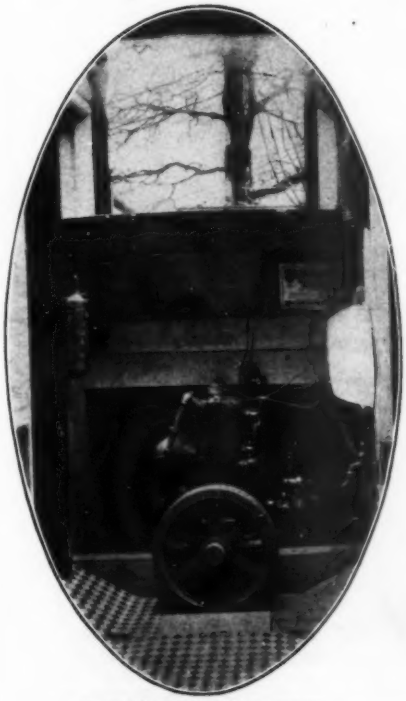
Built in sizes from 10 to 100 h. p.—a range that will meet the requirements of any boat powered with motors up to 100 h. p.

Write us for the SYRACUSE Catalog.

SYRACUSE GEAR COMPANY
SYRACUSE, N. Y.

A PALMER IS THE MOTOR

which will help the Hippocampus on her 7000 mile trip



Power Plant of the Hippocampus

Follow the Palmer on her trip to San Francisco, California.

There is one for every purpose. From 2 1-2 h. p. model A-1, 2 cycle up to a six cylinder 75-85 h. p. 4 cycle.

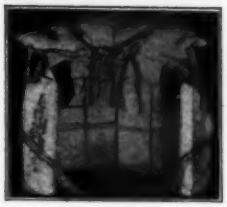
PALMER BROTHERS ENGINES, Inc.
COS COB, CONN.

Branches and Distributers

New York **Norfolk** **Seattle** **Vancouver**
Philadelphia **Baltimore** **Portland, Me.**

G.H.MASTEN CO., Inc.

Masten
TRADE MARK



Only type that has Government Approval for Overseas.

New York Distributors for
Caille Motors and Regal Gasoline Engines

Caille 5 Speed Outboard Motor

Manufacturers of
Motor Boat Tops, Spray Hoods, Life Rafts, Life Preservers, Cushions, Swimming Belts, Cabin Upholstery, Draperies. Builders of Row boats, Motor boats, Runabouts, Cruisers

MASTEN REVERSIBLE LIFE PRESERVER

For Inland Waters, Rivers and Harbors equip your boat with Masten Government Approved Life Preservers

Learn to swim in half an hour with a Masten's "Liberty" Swimming Belt.

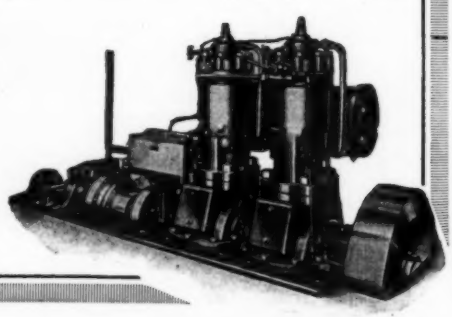
For sale by leading dealers

G. H. MASTEN COMPANY, Inc.
38 EAST 9TH ST., N. Y.

THE MIANUS

AN IMPROVED DIESEL

NOT a "Semi-Diesel"; NOT a surface ignition engine; NOT an engine requiring pre-heating of any kind.
BUT a real Diesel of 500 lbs. compression in which the usual complicated Diesel engine mechanism has been eliminated.
It retains all the wonderful efficiency, smoothness of power flow, great range of control, and complete freedom from carbon of the Diesel Type.
In sizes as low as 7½ H. P.
Write today for Catalog "R" giving full details
We are also builders of MIANUS Gasoline Motors.



THE MIANUS MOTOR WORKS
STAMFORD, CONN., U. S. A.
New York, N. Y. Baltimore, Md. Norfolk, Va. Boston, Mass.
Portland, Me. Eastport, Me. St. John, N. B.

The Motor of No Drawbacks

GIERHOLTT

Gearless Drive Outboard Motors
Marine City, Mich.

Solves:
The Starting Problem
The Weed Problem
The Shallow Water Problem
GEARLESS DRIVE

In carrying or in stalling position heaviest part weighs 40 lbs. All parts accessible. Carries like a hand bag. Detachable propeller shaft. Removable gas tank. Convertible to inboard. Write for particulars.
AGENTS WANTED

Money Saved Is Money Made

E. J. WILLIS CO. **85 Chambers St., New York**

Advertising Index will be found on page 126

Hacker Runabouts Getting the Finishing Touches

This picture shows a corner of the big Hacker boat plant at Mt. Clemens, Mich., devoted entirely to producing the famous 21 foot Hacker runabouts. Here are some of the boats getting the finishing touches in paint and varnish.

Quantity production makes it possible to sell this boat for less than half of what it would cost under the one-at-a-time method of building. The beam is 5′ 8″ and draft only 16″ yet the high freeboard and V bottom design makes it very dry and seaworthy. The engine is a 20 H.P. Kermath, electric starting and lighting, giving a speed of 20 miles.

Price only

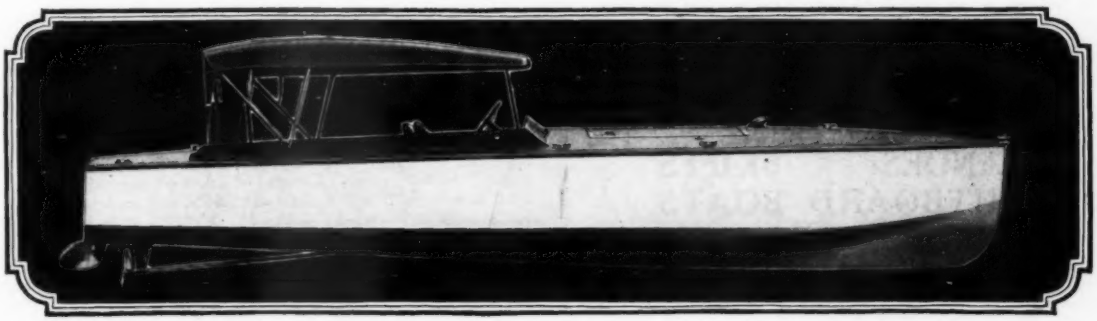
$1975

Plus tax
F. O. B.
Mt. Clemens

Designed and Built by John Hacker, N. A.

Order early

CENTRAL MARINE SERVICE CORP.
709 VINTON BUILDING **DETROIT, MICH.**



Mullins "V" Bottom Boat — Keeps an Even Keel

No matter what the speed—regardless of how choppy the sea, Mullins newest "V" Bottom steel boat keeps an ever even keel. Will not roll or upset.

Developing more speed per H.P., remaining drier when under way and being steadier to pilot, the "V" bottom boat has many advantages over a round bottom boat. Lighter in draft, the "V" bottom is in less danger from shoals and shallows.

Mullins boats are safe as life boats—air compartments, fore and aft, insure permanent buoyancy. The steel hull retains its shape and remains smooth. Cannot spring a leak—no seams to open. No calking necessary. Can't warp, dry out, rot or waterlog. No boathouse needed. The upkeep is low. Powered with the finest marine motors.

MULLINS STEEL BOATS CAN'T SINK

Mullins boats are designed and built in the world's largest boat factory. Known and used for 25 years on the waterways of all nations. Over 70,000 now in service.

Write for complete description of the Mullins "V" bottom boat. On request, we will mail new catalog, showing many models of power boats, rowboats and canoes.

THE MULLINS BODY CORPORATION
Boat Department
622 Depot Street **Salem, Ohio**

"Those who go to sea must be able to see."

Comet Marine Generators

A NEW LIGHTING UNIT

for the open motor boat or any installation where it is not convenient to install a regular switchboard.

MS Control on T-65 Generator

Comet Generators with **MS CONTROL** combine in one unit generator, reverse current relay, switch and fuse.

MS Control may be mounted on any size Comet Marine Generator. Easy to install, simple and efficient.

Send for Bulletin No. 5.

COMET ELECTRIC CO.

1241 St. Paul St. Indianapolis, Ind.

Peterborough Canoe Co., Ltd.

Peterborough, Canada

HIGH GRADE MOTOR CRAFT

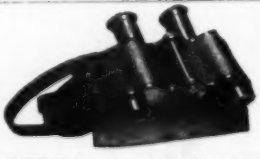
16-foot, 18-foot, and 20-foot stock models for prompt shipment.

CANOES SKIFFS
OUTBOARD BOATS

Ontario Distributors of Evinrude Motors.

Our plant is situated on the famous Trent Waterways.

We are in a good position to take care of any orders from tourists in Canada and to give prompt service and delivery to any part of the Dominion.



NAVARRE

The Quality Binocular—

Special Price $37.50

HERE is your opportunity to get a high grade binocular at a low price. Standard 6 power 30 m/m—specifications adopted by all armies in World War as most efficient under all conditions. Adjusts to strength of each eye. Extremely light. Made by master craftsmen. Beautiful satin finish; heavy leather, velvet-lined case; will attract attention anywhere. Genuine GRAP LENSES. Only instrument constructed of brass—no clouding of lenses as is the case with ordinary aluminum-frame instruments. War contract cancellation price—$37.50—including war tax. Sent C. O. D. or upon receipt of money order for 3 days' trial. Money immediately refunded if you are not entirely satisfied.

THE NAVARRE COMPANY

610 J.M.S. Bldg. South Bend, Ind.

Nautilus, an Easily Built Cruising Houseboat

(*Continued from page* 35)

Plumbing: Enameled iron bath tub, 4 feet 6 inches long, to be fitted in bathroom with connection to rotary pump, nickel-plated, having capacity of seven gallons a minute, pump to connect outboard and pipes to run from pump on bulkhead to tub and to shower head with valve in each line so as to fill tub or supply shower as desired. Suction pipe from overboard to have shut-off so that rubber hose can be attached to rotary pump and tub emptied overboard through a discharge pipe on discharge side of pump. All pipes to have shut-off close to pump.

Water closet and folding lavatory of the owner's selection to be installed. Toilet paper holder, towel bar, soap dish, three coat hooks, tumbler holder and medicine cabinet to be fitted.

Under seat on roof a 15-gallon 48 x 10-inch cylindrical galvanized water tank with filling pipe, vent, supply pipes to folding lavatory and faucet at sink, strapped to pine cradle to be provided. Sink to be 12 x 18-inch enameled iron.

Gasoline Tank: Under seat on roof a 25-gallon 48 x 12-inch cylindrical seamless steel tank to be installed in pine cradle, strapped in place, fitted with fill vent, copper feed pipe led to point near carburetor, etc.

Steering Gear: A steering wheel and binnacle stand with 28-inch wheel and 3¼-inch compass shall be fitted on upper deck and arranged by means of rods passing down through deck and under the cabin floor to connect with an 18-inch quadrant tiller. Rudder stock to be 2-inch diameter bronze riveted to 5/16-inch brass rudder blade. Port to be brass pipe with pipe cap bored to fit stock.

Equipment

Windlass of owner's selection to suit weight of anchor and size of manila cable.

Set running and anchor lights.

Government equipment required such as fog bell, fog horn, life preservers, fire extinguisher, etc.

Set of davits and 9-foot dinghy.

Bow and stern flag pole sockets and poles.

American yacht ensign.

Galvanized 8-inch chocks.

Two 10-inch galvanized bitts on aft deck.

Shipmate stove complete with Liverpool head and smoke pipe.

Chairs, table, etc.

Painting and Finish: Whole interior of hull to be given coat of lead priming paint. Topsides above painted waterline to be given coat of priming paint and at least three coats of yacht white, including bulwarks and transom. Underbody to receive coat of red lead in oil and at least two coats of best anti-fouling copper paint. Canvas covered upper deck to receive three coats of gray paint. Forward and aft decks to be finished bright. Cabin floor painted two coats of gray paint and carpeted or covered with linoleum or other floor covering as desired by owner. A plain carpet of brown or neutral tone is suggested for living room and stateroom.

Finish of under side of roof to be flat white paint tinted slightly with green. Panels of denim painted a cream or light brown with stiles and rails and doors and joinerwork oak stained Flemish oak or dark oak. Cypress may be stained and finished this way as well. If mahogany is used finish suggested is white egg-shell finish with mahogany trim, with denim panels light brown tone.

Motor and Installation: To depend upon the motor selected for installation. A motor of about 15-25 horsepower that is not over five feet long will fit the space allowed and should drive boat about 6-8 miles per hour.

Automatic Self-Bailer

Let your boat bail itself. No more hand or power bilge pumps needed.

With the Automatic Self-Bailer on your hull, the suction created by the boat passing through the water opens an automatic valve and drains the bilge dry. Noiseless, wearproof and trouble proof.

Made of brass, suitable for Fresh or Salt Water. Easily installed and absolutely guaranteed in operation and workmanship.

If your dealer cannot supply you, write us

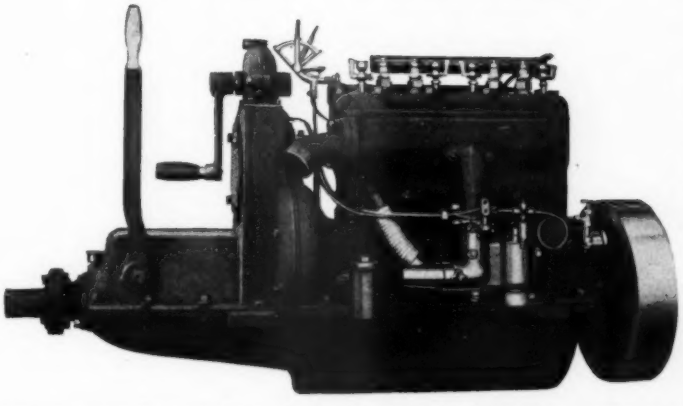
ST. CLAIR IRON WORKS

206-212 Witherell Street
St. Clair, Mich.

Advertising Index will be found on page 126

Red Wing Thorobred
THE MOTOR WITH POWER TO SPARE

A New "Thorobred" 10-14 H. P.



We announce quantity production of a new "THOROBRED" Model Marine Motor, our Model D, 10-14 H.P., with many improved features which put this motor in a class above competition.

Bore 2¾", stroke 4"; crank shaft diameter 1¾", bronze back babbitt lined bearings, cylinders machined and ground, unit base extension in one piece, oil tight case, Joes reverse gear in continuous bath of oil, Schebler carburetor and Atwater Kent or Magneto ignition, rear starter or electric starter, as desired.

We want you to know all about this wonderful little machine. We're proud of it, and we know you'll be too, when you know more about it.

Other models up to 40 H.P. Write today.

RED WING MOTOR COMPANY, Dept. B, Red Wing, Minn., U. S. A.

TO COMMAND

Distinction — Respect — Attention

Equip Your Boat with a

"STROMBOS"

Most Powerful of All Signals
(Length 16¼ inches)

1. Uses 1/10 the amount of air required by a whistle.
2. Penetrates and dominates the loudest noises.
3. Power of many ordinary horns concentrated in one.
4. Its agreeable tone does not shock the ear.
5. Cannot be confused with other sounds.
6. Never out of order. Always ready.
7. Needs no attention. No adjustments.

A tone of tremendous power and penetration, unlike any other, pleasing in quality —crashing, intense in volume. Audible at great distances. Commands and compels attention for "STROMBOS"-equipped boats wherever they go. Your "STROMBOS" will be the envy of your club, the sensation of the fleet.

WHAT OTHERS SAY

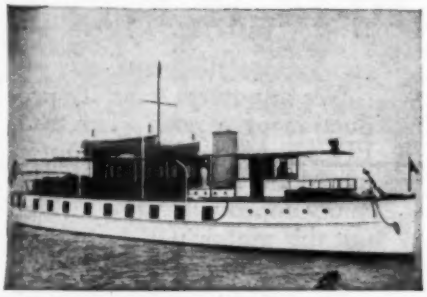
"The Horn is a wonder!"
"I was overwhelmed at first by its loudness"
"It is more than you claim for it"
"They heard me four miles away"

Write today for Circular M-B. We guarantee the "STROMBOS" or money refunded.

Boat Builders! We co-operate with you. Write for particulars.

AMERICAN STROMBOS COMPANY, Inc., Market and 18th Streets PHILADELPHIA, U. S. A.
NEW YORK OFFICE, 507 FIFTH AVENUE

Plan for Next Winter in Florida



85-ft. Houseboat Luneta, Mathis-built for Col. S. L. H. Slocum, Washington, D. C.

You may not think so now, but it is very likely that you will spend a part of next Winter in Florida.

And if you go there early enough in the season there is every possibility that the soft, balmy climate will win you to the point of spending your entire Winter there.

In either event you will want a houseboat—to get the utmost of enjoyment and comfort out of your stay. But to make certain of getting one the time to plan is now—not later when the yards are rushed, when all houseboats already built are either chartered or reserved for their owner's use.

The feature of every Florida season for a dozen years past has been

MATHIS-BUILT HOUSEBOATS

combining ideal sea-worthiness, comfort, roominess and ability-to-go-anywhere—even along the tortuous inland streams that abound in Florida.

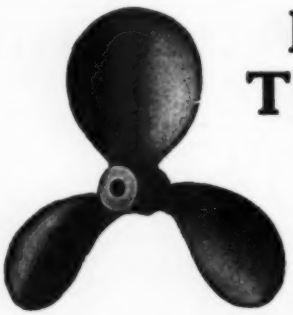
Our continued specialization on houseboats and cruisers from 40 to 120 feet has developed here a faculty of building within the length and beam of all our craft those advantages usually possessed only by boats of twenty to thirty feet greater length. And the smaller-boat upkeep and maintenance cost is not departed from.

Communicate with us—have us tell you what your boat will cost Mathis-built.

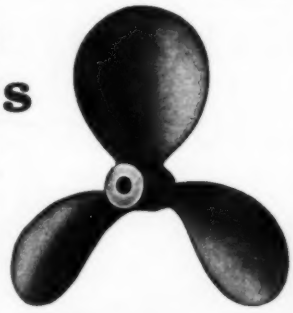
Mathis Yacht Building Company

Specialists in Cruisers and Houseboats from 40 to 120 ft.

Cooper's Point **Camden, N. J.**



Hyde Turbine Type Propellers



are stocked in every locality. The following is a partial list of firms carrying Hyde wheels. Consult your nearest dealer for information and prompt, courteous service.

PORTLAND, MAINE
Chas. F. Guptill Co.,
175 Commercial Street

NEW BEDFORD, MASS.
Hathaway Machinery Co.,
North Water & Elm Streets

PHILADELPHIA, PA.
Elisha Webb & Son Company,
136 South Front Street

CRISFIELD, MARYLAND
Clarence Sterling & Son,
1104 Main Street

SAVANNAH, GEORGIA
White Hardware Company,
25 Congress Street, West

NEW ORLEANS, LOUISIANA
Stauffer, Eshleman & Company,
511 Canal Street

WILMINGTON, CALIFORNIA
Fellows & Stewart

PORTLAND, OREGON
Oregon Marine & Fisheries Supply Co., 105 First Street

DETROIT, MICHIGAN
Belle Isle Boat & Engine Company,
East Jefferson & Parkview

CHICAGO, ILLINOIS
W. L. Masters & Company,
229 North State Street

BOSTON, MASS.
Rapp-Huckins Company,
59 Haverhill Street

NEW YORK CITY
W. C. Disbrow, Jr.,
8 Reade Street

BALTIMORE, MARYLAND
Unger & Mahon, Inc.,
Pratt & Gay Streets

NORFOLK, VIRGINIA
Gas Engine & Boat Corporation,
First Street near Front

MOBILE, ALABAMA
Marine Supply Company

HOUSTON, TEXAS
C. L. Bering Company,
1009 Capitol Avenue

SAN FRANCISCO, CAL.
Johnson, Joseph & G. M. Josselyn & Co., 56 Sacramento Street

SEATTLE, WASHINGTON
Pacific Net & Twine Company
1213 Western Avenue

ALEXANDRIA BAY, NEW YORK
Hutchinson Bros.

MILWAUKEE, WISCONSIN
Joys Bros. Company,
201 East Water Street

Write for our booklet "Propeller Efficiency." It contains valuable information. A copy will be mailed on request.

HYDE WINDLASS COMPANY **Bath, Maine**

Advertising Index will be found on page 126

DIESEL ENGINES for PLEASURE YACHTS

IDEALIA, 84′ x 14′ x 3′, is powered with a 120 H.P. NELSECO Diesel engine which drives her 14¼ miles per hour, using only six gallons of fuel oil per hour. It would take 15 gallons of gasoline to produce the same power, *at approximately ten times the cost.*

Everyone concedes the advantages of Diesel engines for commercial boats. The case of Idealia and other successful installations prove that NELSECO engines are equally suitable for substantial pleasure yachts and large cruisers.

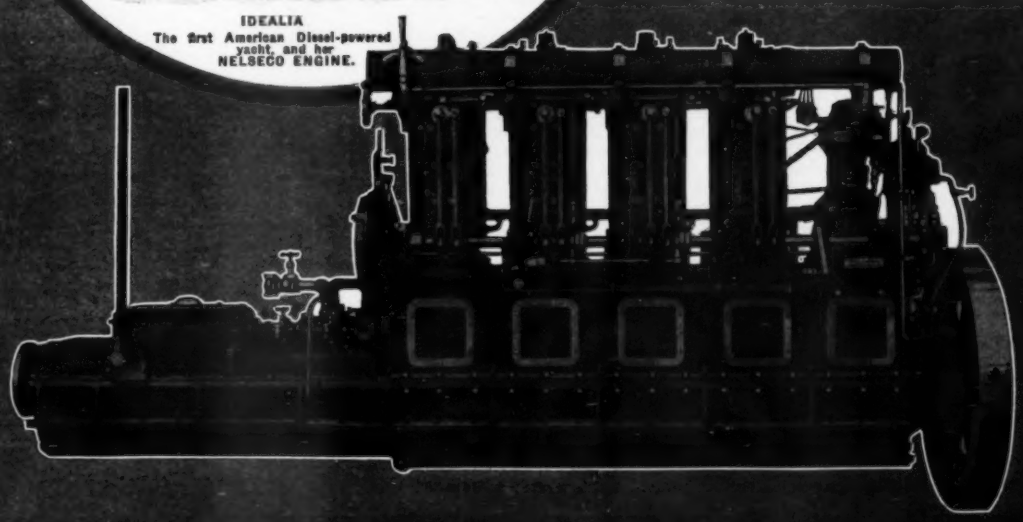
The broad experience of this company, the first to build a Diesel Engine in America for marine use, is at the disposal of those who are interested in investigating or planning a Diesel powered boat. Our engineers will take pleasure in working out your power problem if you will put it up to them. 120 B.H.P. to 3400 I.H.P.—over 150,000 B.H.P. in use or on order.

Let us send you complete information.
Give us the details of your boat.

THE NEW LONDON SHIP & ENGINE COMPANY
Groton, Conn., U. S. A.

Pacific Coast Office: 402 Exposition Bldg., San Francisco, Calif.

IDEALIA
The first American Diesel-powered yacht, and her NELSECO ENGINE.



BEFORE
This boat looks like a sieve
With JEFFERY'S MARINE GLUE she can be made as tight as a new tin pan.
AFTER
JEFFERY'S MARINE GLUE has certainly done the trick She doesn't leak a drop now
Oh Boy! Another one! This is a little different than continually baling out the boat

Use Jeffery's Waterproof Marine Glue and Enjoy Every Minute of Your Outing

Does Your Boat Leak?

Send for our Booklets *"How to Make Your Boat Leak-proof"* and *"Marine Glue—What to Use and How to Use It."*

Each grade is for a different purpose. IT IS IMPORTANT THAT YOU USE THE GRADE WE RECOMMEND.

Any old boat, so long as the frames are in fair condition, can be made watertight by following the instructions, in the above booklets. This applies to anything that floats from a canoe to a yacht, wood or steel.

Put your leak troubles up to us—we will help you to stop them.

For more than 75 years Jeffery's Marine Glue has been the choice of the foremost boat builders of the world.

Jeffery's is a product that has not varied from the strict line of quality—it is not a competitive commodity made to meet a price.

JEFFERY'S WATERPROOF MARINE GLUE

IN ALL THE VARIOUS GRADES

For sale by all Yacht, Boat and Canoe Supply Houses, Hardware, Paint and Oil and Sporting Goods Dealers

L. W. FERDINAND & CO., 152 Kneeland St., Boston, 11, Mass.

Gray Burned Gas Compressor For Storing Whistle Tanks

"Now one of the 1001 WC Products"

A SIMPLE, safe, dependable compressor for storing whistle tanks with burned gas from the cylinders.

A patented piston check valve controlled by an adjustable spring is lifted by the explosion in the cylinder, allowing burned gas to pass around the piston. Before the gas reaches the whistle tank it comes in contact with water-cooled walls and is further cooled by passing through ten feet of tubing. The compressor is waterjacketed, and cannot overheat.

No compression lost. When tank is full, valve automatically shuts off pressure. Will store 75 to 125 pounds on most motors. Can be fitted to any gas engine having a priming cup.

Send for special literature.

Get This Book of Helpful Hints for Motor Boaters

"Sea Craft Suggestions and Supplies" solves those daily "puzzlers" that few know how to handle. Tells how to Box the Compass; what is Proper Ground Tackle; gives hints on Steering Gear, etc.; describes WC Dependable Marine Hardware; tells uses. Compiled from 70 years' experience in making marine fittings. Sent prepaid for 50c.

WILCOX, CRITTENDEN & CO., Inc., 4 South Main St., Middletown, Conn.

ESTABLISHED 1847

Advertising Index will be found on page 126

MAKERS OF FINE YACHTS.

ORIANA II—53'-0" x 12'-6" x 3'-3". Built by New York Yacht, Launch and Engine Company for Mr. Arthur T. Murray, President of the American Bosch Magneto Company

The 20th Century

equipped boats still lead for Quality.

Twenty years of **satisfied** owners have proved the excellence of our Products.

Our boats and motors are worthy of your investigation. They are backed by experience and knowledge of how best to design and construct. The pleasure we take in planning your new yacht will be multiplied and continue to increase as you use the finished craft. We shall be glad to place our organization at your disposal.

Two 85' x 19' House Yachts

Two 73' x 17' House Yachts

One 108' x 12' Cruising Yacht

One 100' x 16' Cruising Yacht

in addition to various types of speed runabouts.

We manufacture the celebrated 20th CENTURY MOTORS

400 to 500 R. P. M.
Heavy duty type

2 cyl., 15-20 B. H. P.
4 cyl., 40-50 B. H. P.
6 cyl., 65-75 B. H. P.

All motors 6½" bore x 8½" stroke, 4 cycle

NEW YORK YACHT, LAUNCH & ENGINE CO.

BUILDERS

MORRIS HEIGHTS, NEW YORK CITY.

Michigan Marine Motor

Write for Folder Today.

The ENGINE You Have Been Waiting For.

Repairs At Any Ford Garage

$135.00

STURDY—RELIABLE—ECONOMICAL

4-CYCLE—4 H. P. WEIGHT 115 LBS.

Well Worth Investigating.

—USER OR DEALER—

MICHIGAN MARINE MOTOR CORPORATION

7235 E. JEFFERSON AVE. DETROIT, MICHIGAN

ATTENTION

WE ARE EXPERTS ON BEARING TROUBLES OR LUBRICATION PROBLEMS

Let us work or treat your own bushings of any material, Babbitt, Cast Iron, Bronze, etc., for any service anywhere. Absolutely no hot boxes with loss in valuable Babbitt metals and incalculable loss of time, etc., rebabbitting. You will save 80% in lubrication oils. 300% increase in the life of your bearings. 50% to the life and service of your belting. Reduces friction in bearings with great economy in power and fuel. Overcomes saturation of machinery and workmen with a great gain in output from them.

Designs—Shop Drawings—Layouts

Oil, Gasolene or Gas engines to operate on crude oil to gasolene, two cycle or four cycle, and for any purpose from farm engines to airplane engines. Let us check over plans now made. We often find suggestions which will repay you many times our small fee.

Inventors—We Design, Develop and Superintend

The construction of your first machines and put them on a manufacturing basis.

Models, Patterns, Specifications, Jigs, Fixtures, Dies, Plans of Tractors, Marine Engineering and Installation of Engines and Equipment, Aviation Engines, Water Systems, Lighting, Fuel Tanks, Separators, Piping, Shop Buildings.

PEERLESS ENGINEERING COMPANY

Mechanical-Hydraulic-Electrical-Engineers

Lock Box 1472 CINCINNATI, OHIO

1200 *Miles at Sea in a Speed Cruiser*

(*Continued from page* 10)

care. Not a feature which might cause trouble was overlooked or allowed to remain in a state of doubtful condition. There were spare parts galore. Dozens and dozens of spark plugs, a spare crank shaft, propeller shaft, pistons, connecting rods, valves, valve springs, in fact spares for every possible contingency that might arise but I am proud to say that aside from a propeller shaft and a few plugs not an extra part was made use of during the entire trip from Miami to Detroit.

The galley also was fully stocked with provisions both fresh and canned sufficient for several weeks. Gar Jr. II is a cruiser in fact as well as in name. During the trip not one meal was had ashore and not one missed aboard even during the time we were at sea jumping from wave top to wave top. A gasoline stove proved ideal for cooking and could be readily operated even during the worst weather. The Commodore was the cook and steward as well as master of the ship and chief engineer. There was no duty which Gar was not the master of. A more ideal shipmate could not be imagined.

There were, however, one or two items in the equipment, or I should more correctly say I believed should be in the equipment, that before the start gave the writer no little worry. But here again it was demonstrated that even on an offshore voyage some time honored customs may be disregarded with no ill effects when one is aboard a speed cruiser instead of a 10-miler. In the matter of anchors—I noticed we had one aboard; it was of the patent stockless type and it might have weighed twenty-five pounds. Captain John Post who had made a dozen or so trips between New York and Florida by the inland route and who happened to be south this winter with no craft on which to return, so Commodore Schantz of Detroit lent him to Gar Jr. II for the trip North, had been making a few remarks about the fact that the anchor which was aboard Gar Jr. would make a fairly good watch charm and that what we needed was a regular Cape Cod kedge weighing at least 100 pounds. This developed a very heated discussion on the merits and demerits of patent and kedge anchors, necessary weights for holding Gar Jr. in a blow off shore, which after several hours debate resulted in a trip to the ship chandlery to get a second anchor that would hold the ship in any weather. After looking over Miami's complete stock of anchors we came upon one which we about decided to take. Upon having it weighed we found that it tipped the scales of 67 pounds. After a moment's hesitation, Gar said "I'll take one of the same type weighing 35 pounds." So a second mudhook was purchased, put aboard, stowed under the cabin floor in the bilge and there it remains to this day to the best of my knowledge and belief if the Commodore didn't throw it overboard when Captain Post and myself left the ship.

The above is almost a repetition of what happened when it came to a discussion of a bilge pump. I had never been to sea without a good husky pump and one spare. When I noticed that there was no pump in Gar Jr.'s inventory, I suggested that it might be well to have at least one pump aboard and preferably two. I received no reply—later when we were purchasing the anchor I took particular pains to point out a number of husky pumps in the stock room—no results—the next day for a third time I started a discussion of pumps, this time believing if I was more conservative in my estimate and would confine my requisition to one pump instead of two it might bring results. Do you think it did? I should say not. The Commodore knew perfectly well that there would be no need for a pump and no need there was. Although with the punishment which Gar Jr. took I believe most hulls would have leaked barrels and barrels of water a day yet never was there enough water in Gar Jr.'s bilge to take out with a sponge. It was absolutely dry at all times. To be sure the hull was equipped with St. Clair automatic bilge bailers capable at the speed we travelled to keep out almost any amount of water, yet these were not required at any time.

The plans for the daily runs were all worked out previous to the start. We were dependent upon fuel stations to a considerable extent in determining our daily runs. We decided upon four points to put on gas and oil, namely, the St. Mary's River, Fla., 360 miles from Miami, Southport, S. C., 660 miles, Morehead City, N. C., 760 miles from the start and Norfolk, Va., 970 miles from Miami. The last named port is about 300 miles from New York. This schedule we lived up to exactly except when we were able to omit the fuel call at Morehead City.

We planned to get away from Miami early Monday morning April 25. But when Sunday evening came and the weather was so fine we decided we should take advantage of such excellent sea conditions, and therefore concluded to head north as soon after midnight Monday morning as possible. Hardly had we made this decision before the wind shifted to the east and there it remained during the entire voyage up the coast.

The people of Miami were taking great interest in our trip. Our expressed desire to beat the train time was soon miscon-

(*Continued on page* 82)

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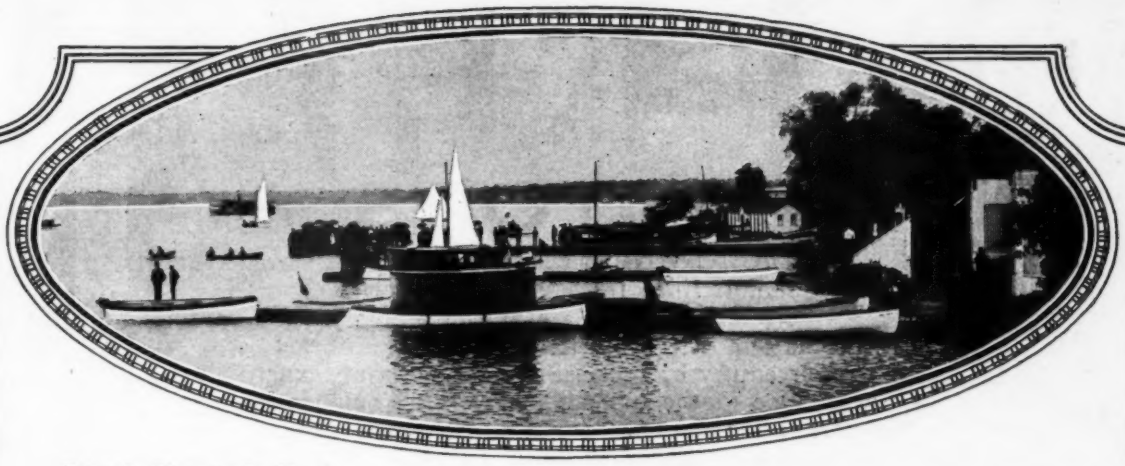


Evinrude Playgrounds—No. 4

Lake Minnetonka, Minnesota's most popular resort lake, where more than 400 Evinrudes are in use.

You Can't Beat It!

UPSTREAM at dawn to favorite fishing grounds—off for a cool ride in the mid-day heat—away to a neighboring resort for an evening's pleasure! It's all fun without a stroke of oar-work, when your rowboat or canoe is Evinrude-powered.

Quickly attached or detached, this sturdy outboard motor is just the power-plant for dinghy or tender. Makes it so much easier to bring guests or supplies out to your anchorage. And at regatta time there's no handier craft than the small boat driven by an Evinrude.

2 Horse Power Automatic Reverse Built-in-flywheel Magneto

What vacation equipment can compare with this husky little motor for sport, for service or for low cost? $10 a year is all you pay for an Evinrude, dividing its price by its life. And only a penny a mile for "gas" and oil. Simple to operate—always dependable, rain or shine. That's why 120,000 Evinruders agree "you can't beat it."

Ask your sporting goods or hardware dealer to show you the Evinrude. Or send for catalog.

Evinrude Motor Company

440 Evinrude Bldg., Milwaukee, Wis.

Distributors:

69 Cortlandt St., New York, N. Y.
214 State St., Boston, Mass.
440 Market St., San Francisco, Calif.
211 Morrison St., Portland, Ore.

Service Stations:

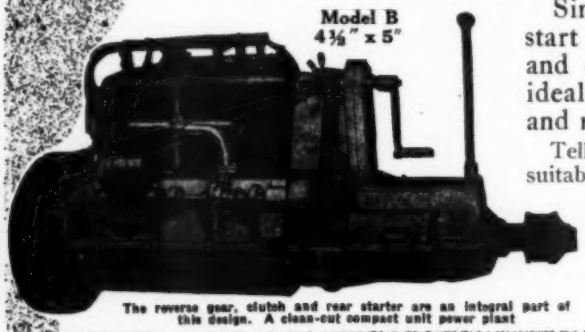
Norfolk, Va.
Savannah, Ga.
5101 S. Main St., Los Angeles, Calif.
122 Chartres St., New Orleans, La.
10-20 No. Howard St., Baltimore, Md.
229 N. State St., Chicago, Ill.
334 Jefferson E., Detroit, Mich.
137 McGill St., Montreal, Que.
1205 Langley St., Victoria, B. C.

EVINRUDE

DETACHABLE MOTOR FOR WATERCRAFT

BRENNAN MOTORS

BRENNAN has been building good motors since 1897. Brennan Marine Motors of today are not only up-to-the-minute in design but have back of them nearly a quarter century of successful manufacturing experience. One of the first and one of the best marine motors on the market.



Model B
4½" x 5"

The reverse gear, clutch and rear starter are an integral part of this design. A clean-cut compact unit power plant

Simple, accessible, complete—easy to start and operate, smooth running, quiet and economical of fuel, these are the ideal power plants for pleasure boats and medium weight working boats.

Tell us your requirements. We have several sizes, suitable for many different types of boats. Complete catalog sent free on request.

BRENNAN MOTOR MFG. CO.
SYRACUSE, N. Y., U. S. A.
Cable Address: "Binot"

Inverted V-bottom and Surface Propeller Boats

SEA SLED

Reg. U. S. Pat. Off.

Hickman Patents in all countries

The feature of the new design Sea Sled that is of world-wide interest is not that she holds all displacement boat records by miles, at 47 miles per hour; nor that she runs at a maximum of six miles an hour faster than the best screw propeller boats on a quarter more weight for her power.

GEORGE LEARY JR.'S SEA SLED ORLO II.

It is that she carries great weights, at every speed down to the lowest, with relatively little power. On the same relative power she carries 15 passengers as fast as the old-fashioned boat carries 4. And so much better and drier and safer.

THE SEA SLED COMPANY
WEST MYSTIC, CONN.

Advertising Index will be found on page 126

"Save it With K-A-U-R-I"

K-A-U-R-I

MADE FROM THE GUM

(*Pronounced Cow-rie*)

Water-Proof Spar Varnish

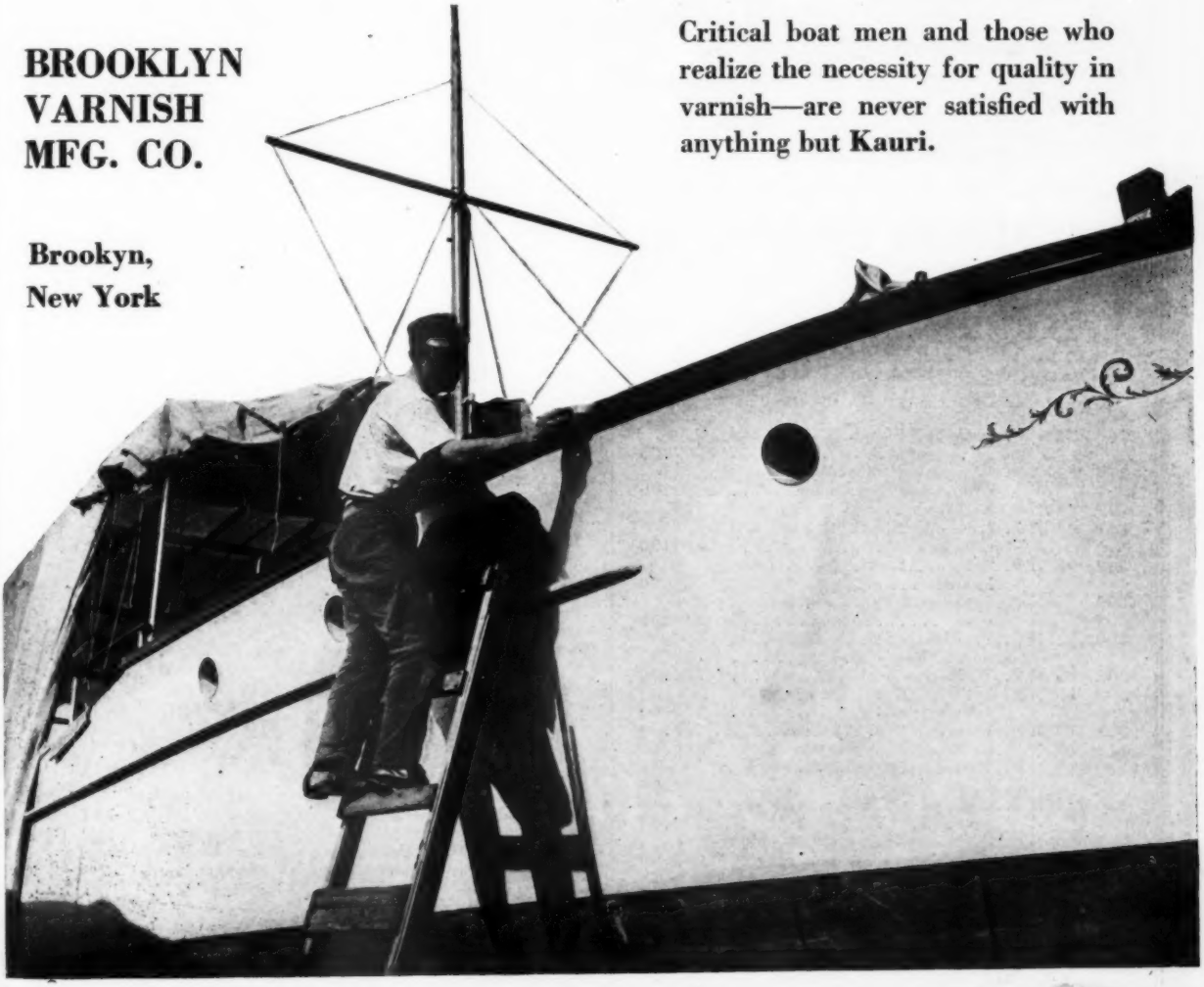
ONE of the most important qualities in varnish for marine use is its ability to withstand the action of salt air and water. Varnish that turns white when exposed to these elements mars the appearance of any boat.

Kauri Varnish is absolutely water-proof and guaranteed to outwear any other spar varnish.

Critical boat men and those who realize the necessity for quality in varnish—are never satisfied with anything but **Kauri.**

BROOKLYN VARNISH MFG. CO.

Brookyn, New York



JASCO
SAFETY FIRST
TANKS

FAULTY TANKS CAUSE FIRES AND EXPLOSIONS

Protect the lives of your family and friends when motorboating by carrying your gasoline in a

"JASCO TANK"

—the tank that safeguards life and property because it *cannot leak.*

"Jasco" Tanks are made of the finest quality drawn steel — seamless, leakless, tinned and tested. They're endorsed by authorities—used by thousands.

You can readily equip with a *"Jasco" Tank.* Send for booklet and detailed information.

Janney, Steinmetz & Co.
Main Office: PHILADELPHIA
New York Office:
Hudson Terminal Building

GRAY-ALDRICH COMPANY, Inc.
84 Atlantic Avenue Boston, Mass.

Rebuilt Engines

All engines thoroughly rebuilt unless otherwise specified.

255	36	H.P.	Lathrop, 3 cyl. 2 cyc. and rev. gear	$700.00
275	80	H.P.	Wolverine, 3 cyl. 4 cyc. prop. and rev. gear	2500.00
277	16	H.P.	Lathrop, 2 cyl. 2 cyc.	285.00
287	24	H.P.	Lathrop, 2 cyl. 2 cyc. and rev. gear	425.00
292	5	H.P.	Lathrop, 1 cyl. 2 cyc. overhauled	65.00
299	24	H.P.	Lathrop, 2 cyl. 2 cyc. no rev. gear	350.00
300	3	H.P.	Faultless Seine Purser, 2 winch heads	135.00
302	5	H.P.	Wolverine with rev. gear	175.00
303	16	H.P.	Lathrop, 2 cyl. 2 cyc. with coupling and prop.	310.00
307	16	H.P.	Lathrop, 2 cyl. 2 cyc.	267.00
312	20	H.P.	Lathrop, 2 cyl. 2 cyc.	380.00
320	215	H.P.	Van Blerck, Model J-8 cyl. Elect. Starter	1850.00
329	24	H.P.	Lamb, 4 cyl. 4 cyc. with rev. gear	600.00
330	90	H.P.	Buffalo, Model "Q" high speed, rev. gear and mag.	1000.00
331			Paragon Reverse Gear, Model "C"	75.00

TRENHOLM FUEL VAPORIZERS for using kerosene fuel on four cycle engines. Vaporizer circular on request.

1200 *Miles at Sea in a Speed Cruiser*

(*Continued from page* 78)

strued. The public soon had it that we were going to race one of the limited trains to New York. In such an event the press of the country saw something new and novel—the right of a railroad train to be considered the quickest means of transportation was to be challenged by a motor boat for the first time in history. It was a signal for the machinery of the press to get busy for big news stories and get busy they surely did. A delegation from the Miami Chamber of Commerce appeared to wish us God speed, George Dewey with his fliers of the Aero Limited presented Gar with a horseshoe of American beauty roses, some brought rabbits' feet, others different articles of luck and charm.

The Aero Limited held two of their most powerful planes in readiness to put to sea anytime within the next few days should they receive word that we were in trouble or distress or should they fail to receive a report of us for twenty-four hours. The U. S. Coast Guard heard of our plans and passed the word along the Coast from station to station to be on the lookout for us. We received numerous requests from various cities and towns en route to put in to their harbors and receive the freedom of their respective communities.

At 11:43 P. M. we had finished bidding farewell to the faithful ones who waited for the actual start so we cast off and headed down the Government channel for the cut to the open sea. The channel runs along the million dollar causeway which connects Miami and Miami beach. Quite a number of cars followed along the causeway keeping abreast of us. We were running better than 1,400 r. p. m. and the cars had plenty to do to keep up. At just midnight we went through the cut into the ocean and headed for the Government light buoy which was to be our first point of departure.

I'm sure none of us will ever forget this run down to the cut. Our parting reception had been so cordial and enthusiastic and we were made to believe that we were on an expedition far more important than that which Christopher Columbus undertook many centuries ago that I think we may have lost sight, for the time being, of the hardships which we knew were surely ahead of us. The bay was glassy smooth, the moon just past full so everything was ideal for speed. Her 900 h. p. seemed to give Gar Jr. a burst of speed that she never before had. We had not the slightest doubt about the result of the race with the express train. If someone had suggested that the lights of New York were visible on the horizon I think all would have believed it. Our destination seemed all too near for with such sailing one could continue to enjoy it for days and days so why limit it to 1,200 or 2,000 miles. But this haughtiness was not to be long lived, for at 12:04 A. M. Monday, April 25, we rounded the gas buoy and headed N½E into the Gulf Stream for New York.

I think the very first wave we hit after taking our departure was the largest one we met during the entire trip. In an instant we were smothered with spray from stern to stern. Life lines had been stretched previous to the start and it was a good thing. Visions of New York ahead lengthened from a few score of miles to many thousands. Wave after wave was hit head on with much greater rapidity than clock ticks. As we were travelling better than 40 feet per second and if you have ever been in the Gulf Stream and know how many wave crests there are in every 40 feet you can well imagine how fast the bumps came. It was hold on for the expected bump and no time to let go between bumps. When we weren't in the actual process of a bump we were high in the air. Quite regularly we missed a bump as we were clear of the deck at that moment, the force of gravity not having been sufficiently powerful enough to bring us down in time. I thought the good ship was due for a break in two any moment. I think I wondered what would happen to the after portion if the bow sections parted forward of the engine room bulkhead. I think the boat minus bow and forward cabin would be going yet. First I looked down the companionway to see if the water was over the floor boards yet—no, not yet. Then I crawled down and searched the bilge not so much to see if there was water in the bilge but to see if there was any bilge left there. Surely several planks were smashed before now.—I was positive I heard them crack—I really thought I felt one strike the propeller as we passed it. But I found bottom, bilge and all. Everything was there except water but not one drop of that—the bilge was as dry as a bone.

After that moment things weren't nearly as bad. The bumps continued but like riding on the Erie you got accustomed to them. Soon you begin to like them—the particular kind of sea legs for this sort of sailing were soon acquired. Then the wonderfulness of this wonderful sort of sailing began to creep upon you. The seaworthiness of the model became apparent and the different way which Gar Jr. II was taking the seas and riding them in contrast to the old displacement models filled one with enthusiasm. A description of it is beyond words.

There are not enough good words in the English language to portray the actions of this boat. She was up on top of the water,

(*Continued on page* 86)

Advertising Index will be found on page 126

Kermath Motors

All Sizes For

IMMEDIATE DELIVERY

From

NEW YORK STOCK

IN order to take care of the increased demand for Kermath motors we have laid in a stock of all sizes—with and without electric starting and lighting equipment. The above illustration shows a carload of this popular machine unloading in the freight station and we can now ship—right from our showroom—any number of these motors within one hour after receipt of the order.

Place your order NOW while we are in a position to effect this immediate delivery. Write us or wire at our expense and we will hold for your shipping instructions.

BRUNS, KIMBALL & CO., Inc.

153-155-157-159 West 15th Street

NEW YORK CITY

CRANE
Plumbing Equipment

is of a quality consistent with the most exacting requirements of sanitation, and is designed for the utmost comfort and convenience of the user.

Above is illustrated a complete equipped bathroom, all the fixtures of which are earthenware, the lavatory and closet being Vitroware and the bathtub solid porcelain, which insures cleanliness at all times.

SALES OFFICES, WAREHOUSES AND SHOWROOMS:

BOSTON, SPRINGFIELD, HARTFORD, BRIDGEPORT, ROCHESTER, NEW YORK, HARLEM, ALBANY, BROOKLYN, PHILADELPHIA, READING, ATLANTIC CITY, NEWARK, CAMDEN, BALTIMORE, WASHINGTON, SYRACUSE, BUFFALO, SAVANNAH, ATLANTA, KNOXVILLE, BIRMINGHAM, MEMPHIS, LITTLE ROCK, MUSKOGEE, TULSA, OKLAHOMA CITY, WICHITA, ST. LOUIS, KANSAS CITY, TERRE HAUTE, CINCINNATI, INDIANAPOLIS, DETROIT, CHICAGO, ROCKFORD, OSHKOSH, GRAND RAPIDS, DAVENPORT, DES MOINES, OMAHA, SIOUX CITY

FOUNDED BY R. T. CRANE, 1855

CRANE CO.

836 S. MICHIGAN AVE.

CHICAGO

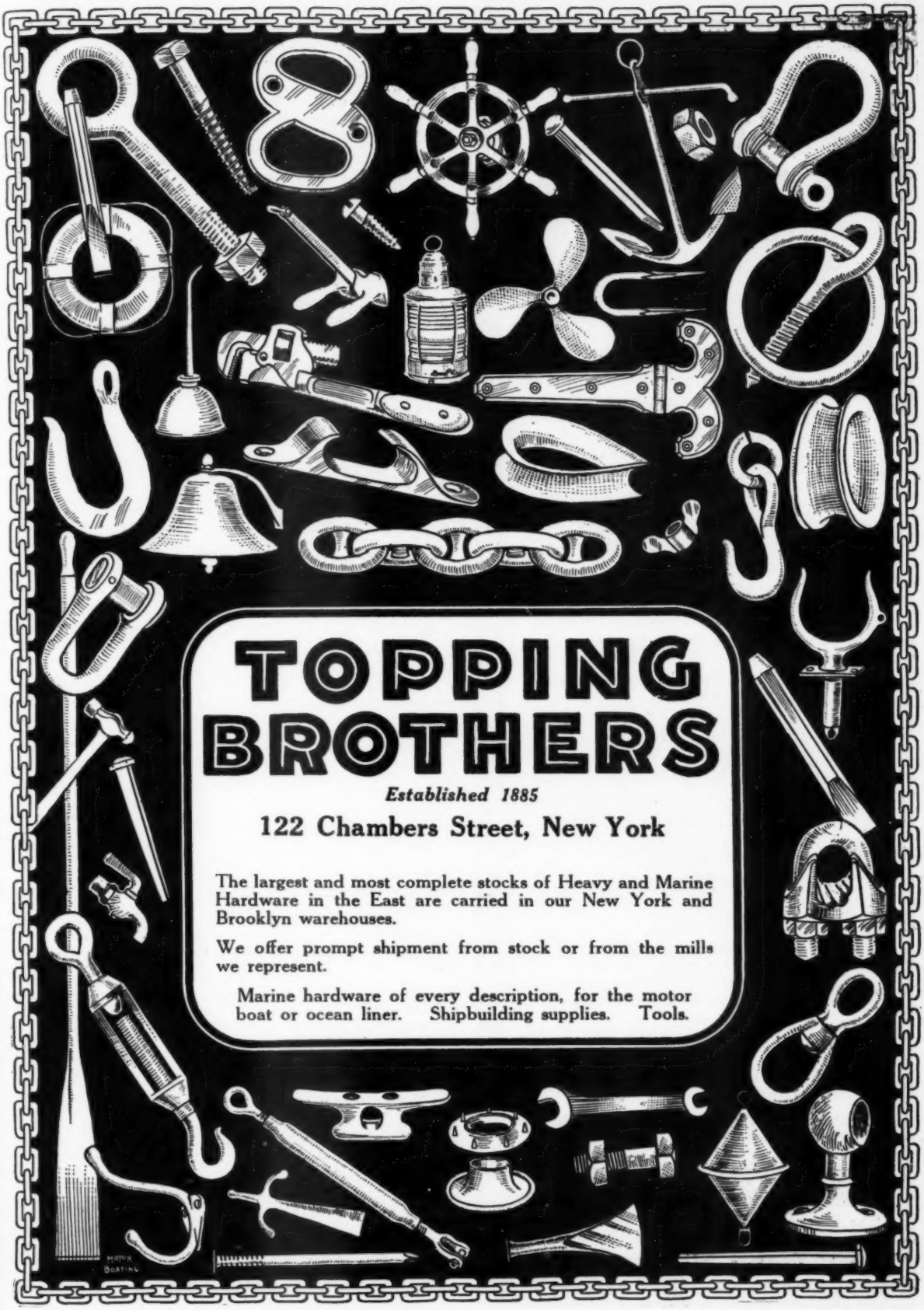
WORKS: CHICAGO AND BRIDGEPORT

ST. PAUL, MINNEAPOLIS, WINONA, DULUTH, FARGO, WATERTOWN, ABERDEEN, GREAT FALLS, BILLINGS, SPOKANE, SEATTLE, TACOMA, PORTLAND, POCATELLO, SALT LAKE CITY, OGDEN, SACRAMENTO, OAKLAND, SAN FRANCISCO, LOS ANGELES

CRANE LIMITED — MONTREAL, TORONTO, VANCOUVER, WINNIPEG, CALGARY, REGINA, HALIFAX, OTTAWA, QUEBEC, HAMILTON, LONDON, ENG., BIRMINGHAM, ENG., MANCHESTER, ENG., SYDNEY, N. S. W.

We are manufacturers of about 20,000 articles, including valves, pipe fittings and steam specialties, made of brass, iron, ferrosteel, cast steel and forged steel, in all sizes, for all pressures and all purposes, and are distributors of pipe, heating and plumbing materials.

Advertising Index will be found on page 126


TOPPING
BROTHERS
Established 1885
122 Chambers Street, New York
The largest and most complete stocks of Heavy and Marine Hardware in the East are carried in our New York and Brooklyn warehouses.
We offer prompt shipment from stock or from the mills we represent.
Marine hardware of every description, for the motor boat or ocean liner. Shipbuilding supplies. Tools.

Columbian Bronze Propellers

are carried in stock by

NEW YORK CITY AND BROOKLYN
Columbia Brass Foundry, 44 Third Avenue
Bowler Homes & Hecker Co., Inc.
259 Greenwich Street
Bruns, Kimball & Company
153 West 15th Street
Sutter Marine Equipment Company
Foot of East 92nd Street, Brooklyn, N. Y.

BOSTON, MASS.
Walter H. Moreton Corporation, 218 State Street

PHILADELPHIA, PA.
W. E. Gochenaur Mfg. Company, 631 Arch Street

BALTIMORE, MD.
Fairbanks, Morse & Company
115 East Lombard Street

DETROIT, MICH.
Henry H. Smith & Company, 252 Jefferson Ave.

CLEVELAND, OHIO
William F. Meier, 1433 West 77th Street

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JACKSONVILLE, FLA.
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George E. Chase & Company, 323 East Bay St.

TAMPA, FLA.
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Arthur Duvic's Sons, 122 Chartres Street
A. Baldwin & Company
Corner Camp and Common Streets

SAN FRANCISCO, CAL.
Weeks-Howe-Emerson Company, 90 Market St.

SAN DIEGO, CAL.
McCaffrey Blade Company

LOS ANGELES, CAL.
Stanton Sales & Engineering Co., 105 Macy St.

SEATTLE, WASH.
S. V. B. Miller, 72 Marion Street

MONTREAL, CANADA
Pyke Motor & Yacht Company
374 Notre Dame Street, West, Montreal

ST. JOHNS, NEWFOUNDLAND
Job Stores, Limited

MIAMI, FLORIDA
A. Pelsang

Columbian Bronze Propellers are carried in stock by the above distributors—order direct from them

COLUMBIAN BRONZE CORPORATION
522 Fifth Avenue **New York City**

The Columbian Bronze Corporation will replace without charge any Columbian Propeller that is broken in use within one year after date of installation.

1200 *Miles at Sea in a Speed Cruiser*

(*Continued from page* 82)

throwing the waves and spray off to port or starboard far away from the sides of the craft and flattening out the water which she actually touched so that not the slightest sign of solid water came aboard. There was not the semblance of roll, an empty tin can placed on the fore and aft line would have remained undisturbed as far as roll is concerned. The point of pivot, or center of buoyancy, was a few feet forward of the transom. The boat seemed to jump from wave crest to wave crest from this point. Of course there was no such thing as following seas—all seas were head. A beam sea was the sort which suited Gar best. How she would scamper in the trough. In this condition the whole motion was as a single unit. The bow rose with the stern and port-side with starboard side.

Gar Jr. II's two engines and twin screws made steering a joy. It required very little effort to keep the boat on her course. There was a minimum of yawing and no tendency to broach. Compass courses to within one half of a point could be easily steered.

Much could be written of the details of the trip up the coast, but most of it would be repetition because the boat acted so beautifully all the time. The trip was every minute a thrill from start to finish without any moments which were less exciting than others. At no time was there any danger or any thought of danger. No engine trouble of any kind was met and not once were the motors stopped except at the fuelling points and at night.

After the first thrills of the ocean had passed and all on board has grown accustomed to the motion and learned to enjoy it, the regular routine which might be expected on any type of boat running up the coast was followed. We cooked and ate regularly. We made notes in the log and took photographs on deck. We used our charts on deck and got our courses with the usual form of course protractor without difficulty. We towed an ordinary yacht log to get the distance run—that is we towed it for a while. But here lies a tale which few who have heard it believe yet it is true.

Just before starting for Florida the writer purchased a Negus log thinking it would be interesting to try it out on the way North and that it might give us valuable data about the value of such a log for use on a fast boat. We had this log fitted with 150 feet of log-line so as to keep the rotator clear of the wake and to reduce the tendency to jump. Gar Wood was skeptical of the idea of towing the log. He said he believed it would not stay in the water but we decided to give it a try anyway. A few minutes after leaving Miami we put it overboard astern. As soon as the 150 feet of log had run out the rotator began to work. The line and attachment on the boat seemed to be turning several thousand revolutions per minute but that was to be expected considering the speed we were travelling. The first few log readings we took seemed to check up with the chart distance very closely. After three hours running there was a difference of seven miles between the two but the Gulf Stream had surely set us north that amount in three hours. We decided to take log readings every hour on the hour. Everything went well for the first few hours in fact up to 8 A. M. when the log showed 187 miles. But when I went aft for the 9 o'clock observation I noticed that the log was not rotating. I tried to give the line a quick jerk to see if I could free it but it wouldn't jerk. I then tried to pull, but it wouldn't pull either. I then put all my strength to it but it didn't budge. I called to Gar, he came aft and we both pulled. Surely but very slowly it began to come in. We gained on it foot by foot. Then something began to break water astern of us, twice this happened and then the log line snapped. Draw your own conclusions but if you someday read in the papers that a big fish has been caught with a log rotator in his stomach we hope you'll inform us for we'd like to claim the rotator. It cost us fifteen dollars and was almost new.

The first day's run up the Florida coast was great. At times we were close enough to the beach to see the people watching us. At other times we were out of sight of land. At just one o'clock in the afternoon we passed Jacksonville. Those of you who have ridden on the train or by car between Miami and Jacksonville, know the time it takes and can appreciate how fast we were going. On the trip by train it took me from 9:30 A. M. to 1:00 A. M. the next morning to make the distance, 15½ hours. We made it in Gar Jr. in a few minutes less than 13 hours.

Our first stop was at Fernandina on the St. Mary's River which is the boundary between the states of Florida and Georgia, where we stopped one hour forty minutes to put on gas and oil. At seven ten that same evening we anchored in Savannah harbor, 459 miles from Miami. As far as we know this is a record for one day's run by motor boat of any type or description. The transatlantic record for 24 hours is held by the steamship Mauretania whose best record for this time is 778 miles. The

(*Continued on page* 90)

Advertising Index will be found on page 126

In Price, Appearance and Performance Here Is the Season's Big Sensation

THIS is the standardized 26 foot Express Runabout, designed and built by Chris Smith, the "speed wizard of Algonac." Every detail is the result of his many years of successful boat building with the result that this wonder boat embodies the best points of the best boats yet sells for about one-half of what you would expect to pay for such a boat. Standardization alone has made possible the comparatively very low price.

We invite you to compare the design, workmanship and performance with any other boat to be had at any price knowing that at every point this Smith boat will prove to be an easy winner.

For example, in design there can be no question as to Chris Smith's genius—one has but to recall the wonderful success of his national and international champions, Miss America, Miss Minneapolis, Miss Toronto, Miss Detroit, Gar, Jr., Gar, Jr. II and many others.

In workmanship, it has been an outstanding feature of all Smith boats that they have always stood up under the hardest tests yet are most beautifully finished.

In performance, there is no other 26 foot runabout with a 4 cylinder engine that can equal the speed of this boat, take the short turns so cleanly, be so absolutely dry and seaworthy and ride so comfortably.

Its length is 26 ft., the beam 6 ft. 6 in., draft 22 in. V bottom, double planked, fully equipped for fresh and salt water. Seating 8 people comfortably. Guaranteed speed 30 miles (the tests showed 35 miles).

The power plant is the Hall-Scott 5¼ x 7 four cylinder 100 horsepower engine, complete with electric starting and lighting, standard reverse gear, water cooled exhaust manifold, 160 ampere hour battery. In fact a complete and perfectly operating power plant in every way.

The price on the standard finish boat (painted hull with mahogany trim) is only $3,950 f.o.b. Algonac, Mich., plus war tax. The special finish of full mahogany is $500 extra. Orders should be placed promptly to avoid disappointment from late delivery.

Address all inquiries for Smith built boats to

CENTRAL MARINE SERVICE CORP.

723 Vinton Building **Detroit, Mich.**

MoToR BoatinG Books for Boatmen

All Published by MoToR BoatinG—All Non-Technical and Authoritative

MOTOR BOATING PRACTICAL HANDBOOKS—6 VOLUMES

Volume I —Practical Motor Boats and Their Equipment.....$1.50
Volume II —Practical Motor Boat Building 1.50
Volume III —Practical Things Motor Boatmen Should Know..... 1.50
Volume IV—Practical Marine Motors..... 1.50
Volume V —Practical Motor Operation and Maintenance..... 1.50
Volume VI—Practical Suggestions for Handling, Fitting Out and Caring for the Boat..... 1.50

The books measure 7 x 10 inches and are handsomely bound in cloth. Over 1,000 pages. Price of Practical Handbooks $1.50 per volume or $7.50 per set of Six Volumes.

THE IDEAL SERIES

Volume I—Designs of Ideal Motor Boats and How to Design a Motor Boat.....$2.00

This volume describes in detail how to design a motor boat. It also contains complete plans of 30 Cruisers, Runabouts and Auxiliaries. The plans include lines, table of offsets, interior plans, profiles, construction details, etc. There is no book published at the present time which describes in everyday language the details of designing a boat according to your own tastes. The plans of Ideal Cruisers, Runabouts and Auxiliaries are complete in every particular. They include the best of the plans published in MoToR BoatinG during the past several years. The plans include boats of from 20 feet in length up to 40 feet. The drawings are all to scale and large size.

Volume II—How to Build Sixteen Ideal Motor Boats $2.00

This book gives complete information for building the following boats:

10-foot mark boat, 12-foot outboard motor boat, 12-foot speed boat, 12-foot bangabout, 13-foot sea skiff, 16-foot sharpie, 18-foot runabout, 20-foot monoplane, 20-foot hydro-runabout, 20-foot knockabout, 20-foot tunnel stern, 22-foot V-bottom runabout, 25-foot V-bottom cruiser, 25-foot round-bottom cruiser, 28-foot cruiser (Consort II).

Every article is fully illustrated with working drawings and no information or instructions are missing which would be of assistance to the novice to build his own boat.

Both of the Ideal Books are printed in large type on extra fine paper. They have been edited by Charles F. Chapman, editor of MoToR BoatinG.

Price of Ideal Books, $2.00 per volume or $5.00 per set of 3 volumes.

A New Book of Boat Plans
Twelve Complete V-Bottom Designs
Ideal Series, Vol. 3
by William H. Hand, Jr.

Plans Prepared Expressly for MoToR BoatinG

This new book is the most valuable ever published for the amateur builder or anyone desiring to have a V-bottom boat built by his own builder.

The plans contain outboard profile, lines, inboard, construction and interior arrangement plans, sectional views and complete table of offsets. Accompanying each design is a description of the boat and a full set of specifications taking up step by step each feature of the boat's construction, how it should be built and the proper material to use.

Plans and specifications of the following boats are included: **Edith, a 15-foot runabout; Jane, an 18-foot runabout; Katharine, a 30-foot cruiser; Dorothy, a 25-foot runabout; Zenith, a 25-foot cruiser; Cyclone, a 36-foot auxiliary; Eclipse, a 40-foot express cruiser; Magnet, a 28-foot cruiser; Tornado, a 45-foot auxiliary schooner; Broncho, a 29-foot cruising runabout; Shark, a 21-foot utility runabout; Claire, a 36-foot express cruiser.**

Price of Twelve Complete V-Bottom Designs...$2.00

(If ordered with the 2 other volumes of the Ideal Series, the price of the 3 books will be $5.00.)

Motor Boatmen's Charts and Log Sheets

Published by MoToR BoatinG

Charts printed on heavy cardboard 8⅛" x 11" and punched to fit standard loose leaf folder.

Contain name and location of all principal ports and harbors, distances, compass courses and sailing directions. Invaluable for use on small boats and motor yachts. The set now includes the following charts:

Series A

No. 1—Western End of Long Island Sound.
No. 2—Eastern End of Long Island Sound.
No. 3—Block Island Sound.
No. 4—New York Harbor.
No. 5—Boston Harbor.
No. 6—Buzzards Bay.
No. 7—Block Island to Vineyard Sound, including Narragansett Bay.
No. 8—Delaware Bay.
No. 9—Chesapeake Bay, Part I, Upper Part.
No. 10—Coast of Maine, Portland to Rockland.
No. 11—Hudson River, Kingston to Albany.
No. 12—Chesapeake Bay, Part II, Central Part.

Series B

Series B Charts Nos. 13 to 24 are in the course of preparation, and will be forwarded as ready. Series B is as follows:

No. 13—Lake Erie—Eastern Part.
No. 14—Lake Erie—Western Part.
No. 15—Hudson River, New York to Kingston.
No. 16—Lake Champlain.
No. 17—Erie Barge Canal.
No. 18—Massachusetts Coast.
No. 19—New England—Newburyport to Portland.
No. 20—Cape Cod Bay.
No. 21—Maine, Monhegan to Eastport.
No. 22—Chesapeake Bay, Part III, Lower Part.
No. 23—St. Lawrence River and Thousand Islands.
No. 24—Biscayne Bay.

MoToR BoatinG has also published a log sheet to fit the standard 8½" x 11" loose leaf folder. Each sheet contains spaces for such data as time of passing various aids to navigation, names of aids, magnetic and compass courses, distances, patent log readings, speed of boat, revolutions of motor, wind direction and force, condition of weather and sea, depths of water, fuel, time of high and low water, etc., etc.

Prices

Charts 25 cents each or $1.50 per set of 12 (Series B will be sent as published).

Log sheets $1.00 per set of 50 sheets.

Loose leaf binders (canvas bound) to hold charts and log sheets, $1.75.

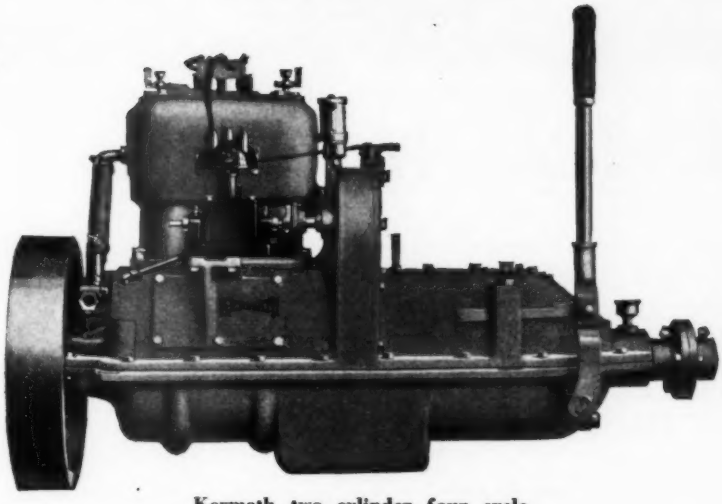
Prices for all books of Practical Series, Ideal Series and V-Bottom Designs. Nine books in all.

If Purchased Separately.....$15.00 If ordered all at one time..... 11.00
All Books, 24 charts, log sheets and binder. Ordered together 15.00

MoToR BoatinG, 119 West 40th Street, New York

Advertising Index will be found on page 126

"A Kermath Always Runs"



Kermath two cylinder four cycle unit Power Plant. 4-5 and 6-7 H.P.

JUST THE RIGHT SIZE MOTOR FOR THAT SMALL LAUNCH

AND its dependable, never failing power will certainly surprise you.

For the same high grade material and fine workmanship goes into one of these smaller size motors, as is used in our larger sizes of world-famous Kermaths.

This sameness is even carried out in size for they are *exactly* one-half of the Kermath 12 and 16 H.P. models.

Kermath dependability is often a topic of discussion in motor boat circles. They are easily started and "A Kermath Always Runs."

One of these two-cylinder, four cycle engines will give you and your family a vast amount of pleasure and healthy recreation this summer.

Its simplicity of action and ease of control fills you with that feeling of pride that comes with the ownership of good things.

A thrifty user of gasoline and oil and standardization of parts makes this Kermath a very economical motor to use.

Write our dept. D for descriptive, interesting literature or better yet go to the nearest Kermath dealer.

Ask him to show you the Kermath four and eight H.P. motors. He is an expert in his line and will be glad to be of service to you.

Kermath 4 to 40 H.P. $230 to $1650. Immediate Delivery

KERMATH MANUFACTURING COMPANY

5880 Commonwealth Avenue **Detroit, Michigan**

KERMATH

"America's Standard Four Cycle Engine"

1200 Miles at Sea in a Speed Cruiser

(*Continued from page* 86)

time consumed by Gar Jr. II in covering this 459 miles was only 17 hours, 26 minutes.

The second day's run was also a joy. Getting away from Savannah at 5:45 A. M. we found the ocean smooth and without any wind. We set the throttles at 1,300 r. p. m. and the motors ran hour after hour without any attention whatsoever. By 8:25 A. M. we had passed Charleston lightship 81 miles from Savannah entrance. Our course now took us many miles off shore but it made no difference in our speed. After passing the lightship we set our course NE¼E for Southport 125 miles away. At 12:19 P. M. which marked 24 hours of actual running we were 12 miles off Southport or 653 miles from Miami, certainly a good 24 hours run. At 12:30 the whistler off Southport came into view, dead ahead and at 12:42 we passed abeam of it and headed into the harbor to replenish once again our fuel which diminished at the rate of 50 gallons an hour.

By 2:10 we were again on our way and after passing Cape Lookout ten minutes later we knew that the next thing we would be looking for would be the little entrance to Morehead City, N. C., just one hundred miles away. On this run the wind came up quite strong from the southeast but as this caused only a following sea we hardly gave it enough notice to comment upon.

The weather up to this time had been warm and balmy but as we were now some 700 miles from Miami the difference in temperature from that at the starting point was now becoming quite apparent. So far it had been no coats or sweaters but as this afternoon went on, the sweaters went on also and before Morehead City was reached coats were necessary for comfort too.

Morehead City was reached at 6:12 P. M. and after putting on lubricating oil but no gas we anchored for the night in the canal just west of the city.

The next day's run would be "inside." However the term "inside" isn't to be taken literally for Pamlico and Albermarle Sounds are large bodies of water which take one out of sight of land for most of the way. As a matter of fact we didn't see land much of the way for we encountered fog until we got well up to Norfolk.

At 6:50 A. M. on April 27 we were underway with fog. Now our real navigation was to begin. These sounds are shallow with courses averaging about 10 miles in length. Some are much shorter and required changing our direction quite often. We set off averaging 30 miles an hour, which is at the rate of one mile every two minutes. This made navigation fairly simple for all we had to do was to calculate the length of each course, multiply this length by two and this would give us our time in minutes to make good the distance. To anyone used to holding one's course in a fog for an hour to cover eight miles it was a real sensation to have the mark at the end of a course of this length loom up ahead in fifteen or sixteen minutes.

This day's run was perhaps the most interesting of all because it required all to be on their toes every minute. Not once did we slow down on account of the fog. Not one mark was missed nor did we drag water on account of getting out of the channel. It was railroad speed all the time and no grade crossings. A short distance of the run on this day was through the Albemarle and Chesapeake Canal which is a beautiful body of water connecting Norfolk with Albemarle Sound. This is a Government canal without locks and we were able to run at full speed without any undue wash. We found by experimenting that actually we made less wash at thirty miles an hour than we did at ten. At the former speed we were running along on top of the water, while at the slower speeds the hull was down in the water dragging everything along with her. At 1:40 P. M. we arrived at Norfolk, 176 miles for the morning's run and 942 from Miami. Here once again we put on fuel.

New York now seemed only a stone's throw away. Because the Atlantic fleet was scheduled to come into Hampton Roads the next day and we were considerably ahead of our schedule we decided to wait over a day at Norfolk and give those aboard the warships a look at the type of boat they should be using instead of the old obsolete motor craft with which some battle ships are still equipped.

Five A. M. on April 29 found us abeam of old Point Comfort heading for New York. Forty-three minutes later we were abreast of Cape Charles Light, twenty-four miles out. The wind was now from the most undesirable quarter about ENE and the fog was getting thicker and the seas higher every minute. In view of this condition we decided to set our course well off shore and then head for Barnegat about 200 miles away. All this day we steered by compass. After running on our course from 6 A. M. until 10 A. M. in the fog covering slightly less than 150 miles we decided to check our dead reckoning position by means of soundings. We cast the lead seven times at fifteen minute intervals and located ourselves exactly where we expected to be. At 2 P. M. we picked up land a few miles north of Barnegat and from then on the sight of the New Jersey coast resorts was familiar and kept us well posted on our location.

At 2:30 we passed close to a whale and slowed down long enough to get some pictures of it. At 2:50 the first bad luck of the entire trip hit us. While speeding along at about 1,400 r.p.m. and without any warning whatsoever the port propeller shaft snapped off close to the propeller. This made it necessary for us to proceed under one motor and cut our speed down to 13½ miles an hour. Sandy Hook was only 20 miles away, and as we had an extra shaft aboard we decided to put in there, change our shaft and make the rest of the trip the following morning.

At 4:28 P. M. we passed Sandy Hook and were soon tied up to the Government dock. Before we had time to make fast members of the Coast Guard who had sighted us coming in under one motor were waiting for us to give us a hand if necessary. We only had to say the word and they had us on their car in less time than it takes to tell the story, a new shaft in, and back again in the water.

At 8:45 on the morning of April 30 we resumed our trip and were heading full speed for New York. The Statue of Liberty was abeam at 9:15, and at 9:32 we landed at the Columbia Yacht Club, New York City, 1,257 miles from Miami. We computed our time and found we had run for 47 hours 15 minutes, beating the train time of 47 hours 44 minutes by just 29 minutes. Had we not lost some little time owing to the breaking of the propeller shaft we would have bettered our time considerably, but, as it was, we feel that the showing was a very creditable one.

Gar Jr. II. continued on up the Hudson to Albany through the Barge Canal to Buffalo and then on across Lake Erie to Detroit. The story of this portion of the run will be told in the next issue of MoToR BoatinG.

A digest of Gar Jr. II.'s log of the run from Miami to Detroit follows:

		MILEAGE		ELAPSED TIME		SPEED	
		From Miami	For Day	From Miami	For Day	From Miami	For Day
April 25, 1921							
12:04 A. M.	Leave Miami Buoy	0	0	.....	.....	....	....
2:50 A. M.	Passed Palm Beach	63	63	2–46	2–46	22.9	22.9
3:35 A. M.	Passed Jupiter Light	81	80	3–31	3–31	22.5	22.5
5:45 A. M.	Passed Bethel Shoal	130	130	5–41	5–41	22.5	22.5
7:48 A. M.	Passed Cape Canaveral	175	175	7–44	7–44	22.7	22.7
9:40 A. M.	Passed Mosquito Inlet Light	242	242	9–36	9–36	25.3	25.3
11:45 A. M.	Passed St. Augustine Light	302	302	11–41	11–41	25.9	25.9
1:00 P. M.	Passed Jacksonville Whistler	338	338	12–56	12–56	26.2	26.2
1:50 P. M.	Arrive St. Mary's Riv.	360	360	13–46	13–46	26.2	26.2
3:30 P. M.	Leave St. Mary's Riv.	360	360	13–46	.....	....	....
7:10 P. M.	Arrive Savannah	459	459	17–26	17–26	26.4	26.4
April 26, 1921							
5:45 A. M.	Leave Savannah	459	0	17–26	0	26.4	....
8:25 A. M.	Passed Charleston Lightship	530	81	20–06	2–40	....	30.3
12:42 P. M.	Arrive Southport	665	206	24–23	6–57	....	29.7
2:10 P. M.	Leave Southport	665	206	24–23	6–57	....	....
6:12 P. M.	Arrive Morehead City, North Carolina	766	307	28–25	10–59	26.95	28.0
April 27, 1921							
6:50 P. M.	Leave Morehead City, North Carolina	766	0	28–25	0	26.95	0
7:42 P. M.	Passed Slue Llight	786	20	.....	0–52	....	....
9:20 P. M.	Passed Long Shoal	832	66	.....	2–30	....	....
9:55 P. M.	Passed Ro'n'ke Marshes	849	83	3–05	.....	....	....
10:48 P. M.	Passed Cambden Point	874	108	3–58	.....	....	....
12:00–12:15	at Canal Office, Great Bridge	...	...	.....	.....	....	....
12:25 P. M.	Passed North Landing	922	156	.....	5–35	....	....
1:40 P. M.	Arrive Norfolk	942	176	35–00	6–35	26.9	26.7
April 29, 1921							
5:00 A. M.	Leave Norfolk	942	0	35–00	0	26.9	....
5:43 A. M.	Abeam Cape Charles Light	966	24	35–43	0–43	....	....
2:50 P. M.	Abeam Asbury Park (Broke shaft)	1214	272	.....	9–50	....	....
4:28 P. M.	Arrive Sandy Hook	1234	292	46–28	11–28	26.6	25.5
April 30, 1921							
8:45 A. M.	Leave Sandy Hook	1234	0	46–28	0	26.6	....
9:15 A. M.	Passed Statue Liberty	1249	15	.....	0–30	....	....
9:32 A. M.	Arrive Columbia Y. C.	1257	23	47–15	0–47	26.6	29.4
May 1, 1921							
2:20 P. M.	Leave New York	1257	0	47–15	0	26.6	....
2:45 P. M.	Passed Yonkers	1268	11	.....	.....	....	....
2:53 P. M.	Passed Hastings	1272	15	.....	.....	....	....
3:07 P. M.	Passed Nyack	1278	21	.....	.....	....	....
3:46 P. M.	Passed West Point	1302	45	.....	.....	....	....
4:15 P. M.	Passed Newburgh	1310	53	.....	.....	....	....
4:49 P. M.	Passed Poughkeepsie	1325	68	.....	.....	....	....
5:20 P. M.	Passed Kingston	1340	83	.....	.....	....	....
5:45 P. M.	Passed Saugerties	1351	94	.....	.....	....	....
6:07 P. M.	Passed Catskill	1361	104	.....	.....	....	....
6:18 P. M.	Passed Athens	1365	108	.....	.....	....	....
6:36 P. M.	Passed Coxsackie	1372	115	.....	.....	....	....
7:06 P. M.	Passed Castleton	1385	128	.....	.....	....	....
7:25 P. M.	Arrive Albany	1394	137	52–20	5–05	26.6	26.8

(*Continued on page* 96)

The "Comfortably Portable" Motor

The *Elto* Outboard Motor is distinctive in its simplicity; its highly polished aluminum and nickeled parts identify it as the "silvery motor." Twin-cylinder construction; perfect mechanical balance, insuring freedom from vibration; easy, quick and positive starting; self-tilting when striking unseen obstructions or in shallow waters; absolutely weedless; remarkably sturdy and substantial construction.

WHEN Ole Evinrude conceived the idea of producing a new outboard motor, his first and greatest thought was light weight. Through his years of association with the activities of the out-door man, Mr. Evinrude recognized that the outboard motorist's big need was for lighter weight and greater carrying convenience.

With this foremost in mind he so designed his new motor as to eliminate every pound of unnecessary weight and built it so compact as to make it more comfortably convenient in carrying and handling than any motor heretofore produced.

That he has successfully accomplished his purpose is shown by the fact that his new ***Elto*** weighs but ***46 pounds*** and, with the rudder folded back, can be placed in a case of 9¼ in. x 13¾ in. x 34 in. inside dimensions.

Because of its ingenious design and construction, the weight of the ***Elto*** is so evenly distributed that it forms a perfectly balanced load, a feature which will be appreciated by everyone who has experienced the side-breaking strain of carrying an ordinary row-boat motor for any distance.

In the ***Elto***, Mr. Evinrude has accomplished every improvement that experience has suggested and that the out-door man has long been seeking.

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OLE EVINRUDE, President

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Single Cylinder, 2 H.P.
Bore 3¼", Stroke 4"
$42.50

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Kerosene or Gasoline Fuel

IF you want a genuine four cycle motor at the lowest possible cost, don't fail to investigate the Dunn Motors. They give you the undoubted advantages of four cycle design at a cost about the same or less than ordinary two cycle motors.

The low cost of Dunn Motors is due to their simplicity of design and construction. Dunn prices speak for themselves. They are just enough to cover essential materials and workmanship. There are just so many necessary working parts in an engine, and anything beyond this means unnecessary expense for the buyer.

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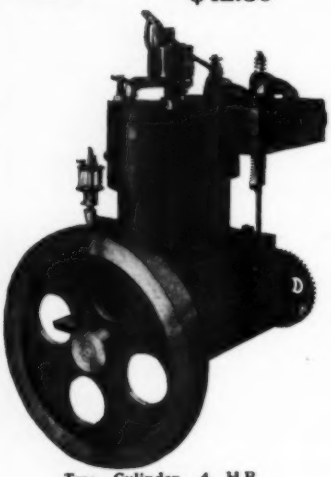
The prices quoted include complete equipment, propeller, shaft, couplings, coil, spark plugs, mixing valves and oil cups. Foreign buyers should add 10% to cover cost of boxing for export and delivery F.O.B. steamer at New York City.



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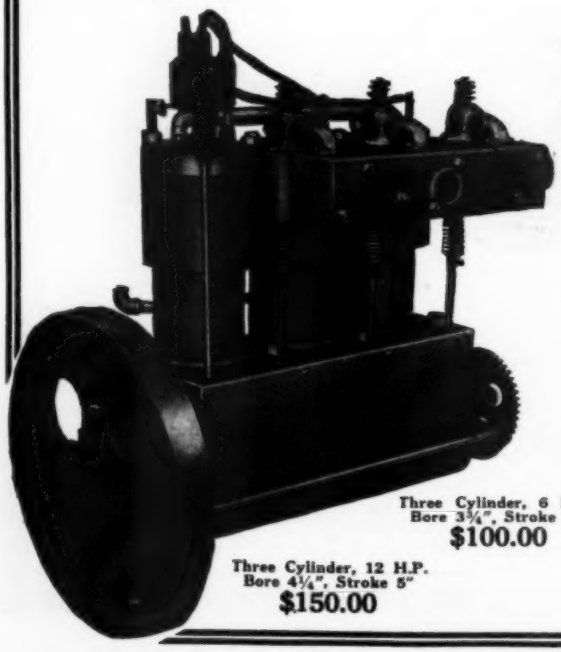

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We guarantee every Dunn Motor to be run under its own power before shipment.

Four Cylinder, 16 H.P.
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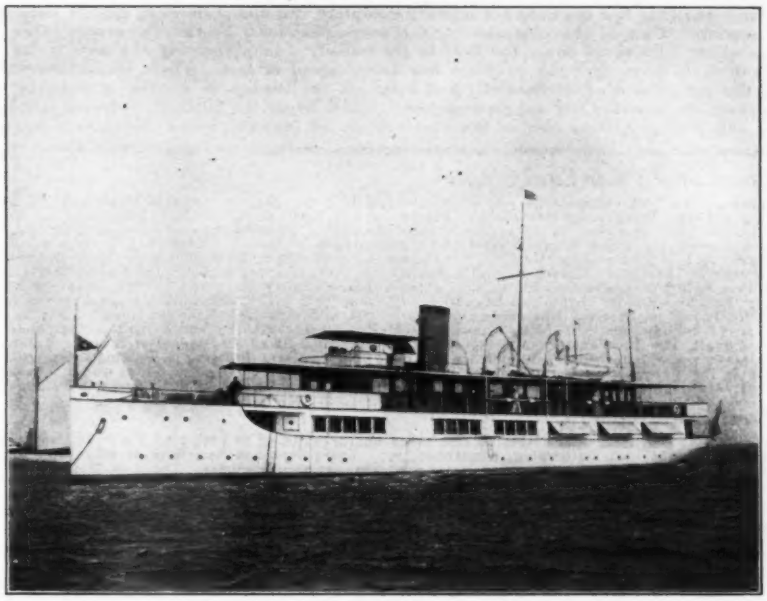

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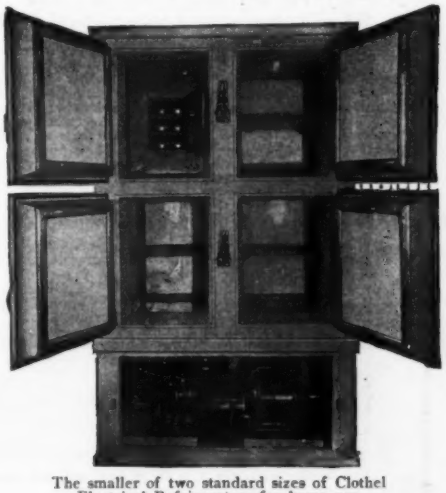

The smaller of two standard sizes of Clothel Electrical Refrigerators for home use.

MOTOR BOATING PRACTICAL HAND-BOOKS

Every motor boatman has long felt the need for a really complete and comprehensive library devoted to their favorite pastime—motor boating. One of the obstacles to the accomplishment of this important work was the difficulty in finding any one writer who could cover the field in its entirety. In presenting the new series of practical hand-books, MoToR BoatinG believes that the problem has been solved at last. These books are edited by Charles F. Chapman, M. E., the editor of MoToR BoatinG, and they are the results of months of untiring effort on his part, together with the best of thousands of suggestions sent to him by motor boatmen themselves. The list of the contents given below will give you some idea of the vast amount of ground covered by these volumes.

Practical Motor Boats and Their Equipment

Volume 1.—The first volume tells you what the ideal boat for various kinds of service should be and what to look for in buying a boat. Many suggestions about decoration and hints on all kinds of equipment. All about steering gears, wireless outfits, electrical attachments, etc. Glance over the list of contents appended herewith: Hulls, Ballast and Seaworthiness; Round Bottom *vs.* Sharp Bilge; What are the Advantages of Flare? Raised Deck *vs.* Trunk Cabin; Best Proportion of Beam to Length; Selecting a New Design; The Advantages of Bilge Keels; Open or Solid Deadwood? What Makes a Hull Seaworthy? The $1,000 Cruiser; Buying a Second-Hand Boat; Types of Bows and Sterns; Exterior Arrangement of Cruisers; The Best Cabin Arrangement; Finishing Up the Cabin; Changes in Interior Arrangement; Interior Arrangement for Open Boat; Propeller-Rudder Arrangements; Best Position for the Rudder; Advantages of the Outboard Rudder; Different Steering Positions; Steering Equipments for Motor Boats; Steering Gear for the Cruiser; The Steering Gear for a Runabout; Steering the Boat from the Side; The Electrical Equipment; Making and Wiring a Switchboard; Electric Lighting on a Motor Boat; The Inexpensive Lighting Outfit; Wiring the Small Cruiser; The Storage Battery; The Dynamo Cut-Out; Wireless for a Small Cruiser; Tender for a Thirty-foot Cruiser; Building a Folding Dinghy; Installing the Boat Boom; What is the Best Galley Arrangement; Ventilating the Galley; The Galley Stove and Its Installation; Making a Fireless Cooker; A Portable Cook Box; Running Water for the Cruiser; How to Build a Portable Table; A Table for the Open Boat.

Practical Motor Boat Building

Volume 2.—As its title implies, this volume takes up the building of your own boat. It also covers the construction of the necessary fittings such as awning, windshield, etc. Every boatman sometime or other builds a boat, and a book of this kind will save much time and prevent many mistakes. List of contents: Types of Motor Boat Fastenings; Boat Building Woods; Laying Down a Boat's Lines; Converting a Trunk-Cabin Cruiser; A Steam Box for Amateur Builders; Joiner Between Stem and Keel; Fastening the Frames and Floors; Boring the Forgotten Limbers; Fitting the Garboard Plank; Boring the Shaftlog; Fitting the Stuffing Box; The Stern Bearings for a Cruiser; A Water-Tight Companionway; How to Canvas a Deck; Hinged Water-Tight Hatches; Making a Water-Tight Hatch; The Coaming of an Open Boat; Fitting a Swinging Port Light; Making a Self-Bailing Cockpit; A Water-Tight Window Sash; Making a Water-Tight Skylight; How to Build an Engine Housing; How to Make an Engine Cover; Building a Tool Locker; Constructing an Extension Transom; How to Make a Pipe Berth; An Ice-Box for a Cruiser; Installing a Toilet; How to Rig a Signal Mast; How to Make a Spray Hood; Fitting a Folding Windshield; An Awning for the Open Boat; A Cover for the Open Cockpit; Screens for the Side Light; A Support for the After Light; A Seat for the Man at the Wheel; Removable Davits for the Cruiser; The Boarding Steps; A Bow Rudder for Your Hydro; The Motor-Driven Club Tender.

Practical Things Motor Boatmen Should Know

Volume 3.—Navigation is one of the important subjects covered in volume three of the series. Tells you how to steer, how to increase the factor of safety, and a host of other things relative to the proper running of your boat. The chart and compass are both fully explained in a clear and comprehensive manner. The list of contents will tell you more about it; Advice for the Beginner; Lessons Learned from Experience; Good Things to Know; Increasing the Factor of Safety; Which Way Should the Boat Steer? Why a Boat Steers Badly; Why do Boats Squat? Figuring the Boat's Speed; Ballasting the Cruiser; Getting Off Bottom; To Ride Out a Storm in a Motor Boat; The Why and How of Storm Oil; Preventing Fire; Handling Ground Tackle; Government Charts; Stowing the Anchor on a Cruiser; Diminishing Deviation; Preventing Electrolysis; Stowing and Using Charts; How to Make a Chart Case; Keeping a Motor Boat's Log; How to Make a Sextant; Tides and Tidal Waters; Taking Her Through the Canals; The Best All Round Dinghy; Towing the Tender; Handling the Dory in a Seaway; Getting the Tender Aboard; Planning for a Cruise; Equipping for a Cruise; Equipment for Offshore Cruising; Novel Events for Regatta Day; Handicapping; The Object of a Handicap Rule; Laying Off a Race Course; Measuring the Length of a Race Course; Preparing a Boat's Bottom for a Race; How to Build a Turning Buoy; Starting Boats in a Race; Stowing the Signal Flags; Fitting a Gun Mount; A Fish Box for Your Cruiser; A Cabin Wall Rack.

Practical Marine Motors

Volume 4.—All about the marine motor; what it should and should not be. Tells why the automobile engine is unsuccessful in marine work. The best location for your engine, the ideal engine bed, the fuel tank, exhaust and countless other suggestions that will enable you to get the best results from your power plant. List of contents: Purchasing a Marine Motor; How Many Cylinders? Power per Cylinder; High Speed *vs.* Heavy Duty; Long Stroke *vs.* Short Stroke; Correct Motor Design; Changes in One's Power Plant; The Things that Cause Vibration; The Automobile Engine for a Boat; The Best Position for the Motor; The Ideal Engine Compartment; Placing the Engine in the Hull; Installing a Motor in a Canoe; Installing Power in a Yawl; Converting a "Banker" to Power Engine Installation in a Hydroplane; Putting Power in the Rowboat; Limits of Shaft Inclination; Constructing the Engine Bed; Getting the Motor Aboard; Lining Up the Propeller Shaft; The Best Exhaust; Mufflers *vs.* Under-Water Exhausts; Installing an Under-Water Exhaust; Primary Batteries for Ignition; Keeping the Ignition System Dry; Installing a High-Tension Magneto; From Make and Break to Jump Spark; Installing the Gasoline Tanks; Taking Care of Extra Gasoline; Spark and Throttle Controls; Constructing a Rear Starter; Propeller for Engine and Hull; Installing a Universal Joint; Gearing Motor to Propeller Shaft; The Automobile Throttle; Harnessing the Main Engine; Rebabbitting a Worn Bearing; Should Fuel Line be Inside or Outside.

Practical Motor Operation and Maintenance

Volume 5.—One of the most valuable books of the entire set. Your motor's ills and how to cure them. This volume tells you how to adjust your carburetor, how to fit piston rings, how to remedy poor compression and a number of other things that will enable you to doctor your own motor. List of contents: Locating the Motor's Troubles; The Overheated Motor; Starting in Cold Weather; Overhauling a Marine Motor; How to Save Fuel; The Fuel Situation; Using Low Grade Fuel; How to Run on Kerosene; Supplying the Fuel to the Carburetor; Adjusting the Carburetor; Cleaning the Fuel Tanks; Cleaning the Gasoline Line; Stopping Up the Leak in the Tank; A Home-Made Gasoline Gauge; Carrying an Extra Supply of Oil; Mixing the Fuel and Lubricant; Remedying Leaky Compression; Killing the Carbon Jinx; Tool and Spare Parts to Carry; Removing and Replacing Piston Rings; Repairing a Leaky Cylinder; Grinding a Motor's Valves; Setting the Valves; Timing the Ignition System; Cleaning the Water Jacket; Making and Fitting a Gasket; Patching Up a Bearing; Straightening the Sprung Shaft; Truing a Bent Propeller; Removing the Flywheel; Separating Couplings and Pipe Fittings; Changing the Shaft Hole Location; Utilizing the Exhaust; Disposing of the Bilge Water; Heating a Small Cruiser's Cabin; Operating the Outboard Motor; The Clean and Quiet Boat; Charging a Storage Battery; When the Motor Stops Unexpectedly; Making a Unit Power Plant.

Practical Suggestions for Handling, Fitting Out and Caring for the Boat

Volume 6.—This volume is an especially valuable one. You will find in it points covering the care of your boat that you never dreamed of before. Whether you are a beginner or a finished expert this book will give you a better knowledge of the handling of your craft than you can imagine. List of contents: Putting the Boat into Commission; Fitting Out a Thirty-Footer; Suggestions for the Beginner; Refinishing Bright Work; Keeping the Wood Surface Bright; Putting the Boat Out of Commission; Laying Up an Unsheltered Boat; Hauling Out for the Winter; Covering the Boat for the Winter; Launching from a Wharf; Correcting Faults; Lengthening Out the Boat; Moorings and Buoys; Taking Steps to Safeguard the Anchor; What to Use in the Bilge; Preserving the Wood in Boats; Emergency Rigs for the Cruiser; Auxiliary Sails for the Cruiser; Providing an Emergency Rudder; Preparing for Southern Waters; Stopping the Troublesome Leak; Replacing a Broken Plank; Removing Broken Lag Screws; Raising the Boat's Stern; Clearing the Propeller; Protecting the Bow and Stern; Open Boat Sleeping Quarters; Ventilating the Cabin of Small Cruisers; Converting the Open Boat to a Cruiser; Making a Cover for the Open Boat; Preventing Electrolysis; Building a Club Float; A Floating Boathouse; Constructing a Landing Stage; Building the Marine; Keeping the Thief Out; A Place for Your Shore Clothes; Stowing for Life Preservers; The Winter's Alterations; What Changes Shall I Make; The Satisfactory Bilge Pump; The Pressure Water System; Making a Pelorus; Your Storm Curtains; Life-Saving Equipment; The Absent Owner's Anchor Light; Mounting the Reverse Gear.

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The books measure 7 x 10 inches and are handsomely bound in cloth. Each volume is fully illustrated and printed in clear type on fine paper.

MoToR BoatinG **119 West 40th Street, New York**

Advertising Index will be found on page 126

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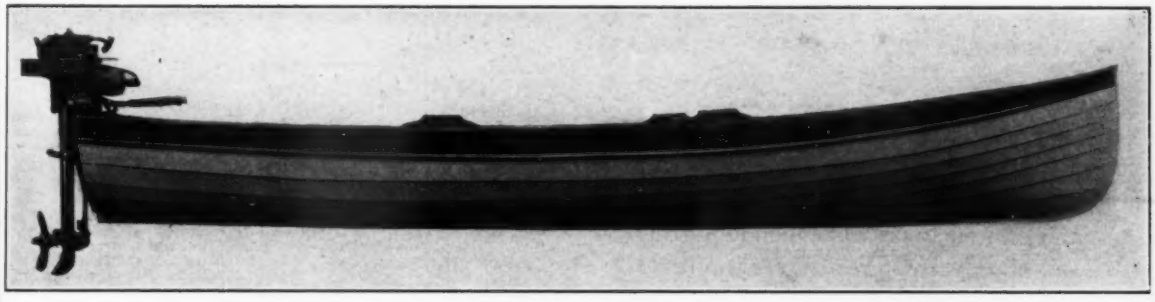

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Dealers Correspondence Solicited

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YACHT PRIZES

J. E. Caldwell & Co. have designed and made many of the important gold and silver yacht prizes offered in recent American competitions.

They are prepared to furnish, upon short notice, designs and estimates for special trophies in precious metals.

They carry in stock a large collection of loving cups, bowls, vases, and other pieces suitable for presentation.

Information and Illustrations Upon Request

J. E. CALDWELL & COMPANY

JEWELERS — SILVERSMITHS — STATIONERS

PHILADELPHIA

1,200 *Miles at Sea in a Speed Cruiser*

(*Continued from page* 90)

		From Miami	For Day	From Miami	For Day	From Miami	For Day
May 2, 1921							
8:10 A. M.	Leave Albany	...	0	52–20	0	26.6	....
8:30– 8:47 A. M.	Lock No. 1	.....	8	.....	.....	....	....
8:55– 9:25 A. M.	Lock No. 2	.. ....	11	.....	.....	....	....
9:30– 9:45 A. M.	Lock No. 3	.. ....	11	.....	.....	....	....
9:48–10:05 A. M.	Lock No. 4	.. ....	12	.....	.....	....	....
10:08–10:19 A. M.	Lock No. 5	.. ....	12	.....	.....	....	....
10:22–10:37 A. M.	Lock No. 6	.. ....	15	.....	.....	....	....
11:02–11:10 A. M.	Lock No. 7	.. ....	23	.....	.....	....	....
11:42–11:59 A. M.	Lock No. 8	.. ....	34	.....	.....	....	....
12:13–12:50 P. M.	Lock No. 9	.. ....	39	.....	.....	....	....
1:05– 1:14 P. M.	Lock No. 10	.. ....	45	.....	.....	....	....
1:29– 1:37 P. M.	Lock No. 11	.. ....	49	.....	.....	....	....
1:52– 2:15 P. M.	Lock No. 12	.. ....	54	.....	.....	....	....
2:22– 2:53 P. M.	Lock No. 13	.. ....	64	.....	.....	....	....
3:13– 3:24 P. M.	Lock No. 14	.. ....	72	.....	.....	....	....
3:35– 3.44 P. M.	Lock No. 15	.. ....	75	.....	.....	....	....
4:04– 4:12 P. M.	Lock No. 16	.. ....	81	.....	.....	....	....
4:42– 5:07 P. M.	Lock No. 17	.. ....	89	.....	.....	....	....
5:18– 5:32 P. M.	Lock No. 18	.. ....	93	.....	.....	....	....
6:02– 6:22 P. M.	Lock No. 19	.. ....	106	.....	.....	....	....
6:48– 7:16 P. M.	Lock No. 20	.. ....	116	.....	.....	....	....
8:02– 8:16 P. M.	Lock No. 21	....	134	.....	.....	....	....
8:23– 8:33 P. M.	Lock No. 22	..1529	135	65–00	12–40	....	....
8:50 P. M.	Arrive Lake Oneida	.1533	139	58–44*	6–24*	26.1	21.7

Note: 6 hours, 16 minutes consumed in waiting at locks.
* Deducting time lost in locking through.

May 3, 1921							
6:52 A. M.	Leave Lake Oneida	.1533	0	58–44	0	26.1	....
7:45– 7:55 A. M.	Lock No. 23	.. ....	25	.....	.....	....	....
8:55– 9:47 A. M.	Lock No. 24	.. ....	44	.....	.....	....	....
10:57–11:07 A. M.	Lock No. 25	.. ....	74	.....	.....	....	....
11:22–11:32 A. M.	Lock No. 26	.. ....	80	.....	.....	....	....
12:01–12:07 P. M.	Lock No. 27	.. ....	92	.....	.....	....	....
12:11–12:20 P. M.	Lock No. 28A	.. ....	91	.....	.....	....	....
12:30–12:41 P. M.	Lock No. 28B	.. ....	97	.....	.....	....	....
1:02– 1:11 P. M.	Lock No. 29	.. ....	107	.....	.....	....	....
1:28– 1:44 P. M.	Lock No. 30	.. ....	110	.....	.....	....	....
3:10– 3:18 P. M.	Lock No. 32	.. ....	127	.....	.....	....	....
3:29– 3:35 P. M.	Lock No. 33	.. ....	128	.....	.....	....	....
6:30– 6:55 P. M.	Locks 34, 35	.. ....	191	.....	.....	....	....
8:00 P. M.	Arrive Buffalo	 1750	217	69.00	10–16	25.4	21.2

Motor Boating on a Small Purse

(*Continued from page* 100)

Stock Boats for Outboard Motors (Continued)

Manufacturer	Length	Beam	Construction
Barbour	14′	3′ 8″	Steel plate and frames, flat bottom
Barbour	16′	4′ 0″	Steel plate and frames, flat bottom
Barbour	18′	4′ 6″	Steel plate and frames, flat bottom
Barbour	14′	3′ 6″	Steel plate and frame, V-bottom
Barbour	16′	3′ 9″	Steel plate and frame, V-bottom
Barbour	18′	4′ 4″	Steel plate and frame, V-bottom
Barbour	20′	5′ 0″	Steel plate and frame, V-bottom
Belle Isle	15′	4′ 0″	Lap strake cedar, planked
Belle Isle	14′	3′ 6″	Lap strake cedar, planked
Belle Isle	16′	3′ 8″	Cedar planked, flat bottom
Brooks	15′	3′ 7″	Semi V-bottom, cypress planked
Cape Cod	16′	4′ 8″	Lap strake
Cape Cod	10′	3′ 6″	Flat bottom, shallow draft
Cape Cod	12′	4′ 2″	Flat bottom, shallow draft
Cape Cod	14′	4′ 3″	Flat bottom, shallow draft
Davis	16′	5′ 0″	Lap strake, mahogany and oak trim
Davis	14′	4′ 8″	Lap strake, mahogany and oak trim
Davis	16′	5′ 0″	Lap strake, mahogany and oak trim
Davis	14′	4′ 8″	Lap strake, mahogany and oak trim
Harrison	16′	4′ 0″	Flat bottom, cedar
Everett Hunter	15′	6′ 4″	V-bottom, white oak, cypress planking
Everett Hunter	15′	6′ 4″	Round bottom, white oak, cypress planking
Evinrude	16′	4′ 0″	Cypress or white oak
Evinrude	16′	3′ 9″	Cypress or white oak
L. E. Germain	14′	3′ 8″	V-bottom
Gidley	15′	3′ 9″	Cedar or white oak, V-bottom
Mullins	16′	4′ 0″	Pressed steel
Sydney McLouth	16′	4′ 4″	Lap strake
Sydney McLouth	18′	4′ 8″	Lap strake
Old Town Canoe	16′	3′ 4″	Canvas, canoe type
Old Town Canoe	16′	3′ 11″	Canvas, canoe type
Peterborough	16′	3′ 10″	Canvas covered, canoe type
Peterborough	17′	4′ 0″	Canvas covered, canoe type
Red Bank Yacht Works	12′	3′ 10″	Clinker, cedar plank, mahogany trim
Sandusky	..	.. ..	
Seabright	..	.. ..	
Skaneateles Boat	16′	4′ 0″	Cedar, lap strake
Skaneateles	18′	5′ 0″	Cedar and oak, carvel planked
Thompson	16′	3′ 0″	Canvas covered, carvel built
Thompson	18′	3′ 0″	Canvas covered, carvel built
Thompson	12′	3′ 4″	Flat bottom
Thompson	14′	3′ 4″	Flat bottom
Thompson	16′	3′ 4″	Flat bottom
Thompson	15′	3′ 9″	White cedar, white oak
Thompson	16′	3′ 9″	White cedar, white oak
Thompson	18′	4′ 2″	White cedar, white oak
Thompson	16′	3′ 10″	White cedar, planking
Toppan	12′	4′ 9″	Pine planking, heavy oak knees
Toppan	15′	4′ 9″	Pine planking, heavy oak knees
Whittington	16′	4′ 0″	Modified V-bottom, white cedar

Advertising Index will be found on page 126

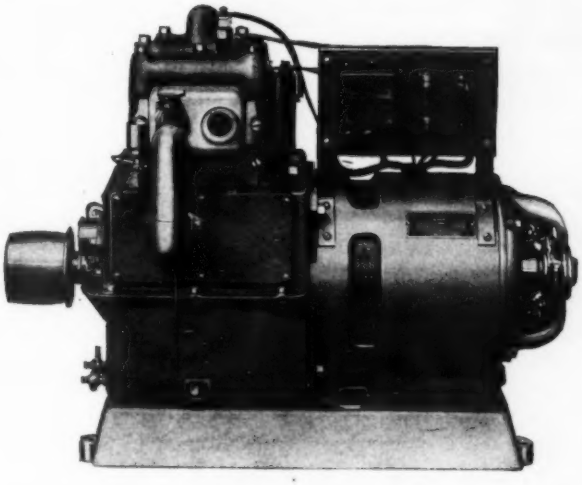
C-Y-C

1-½ KW Electric Generating Plant

Now a

COLUMBIAN

Product



Convinced that the perfect operation of the C-Y-C Electric Generating Plant with kerosene as fuel, the fact that the engine parts are interchangeable with Ford parts, the abundance of power developed by its 5 H.P. engine and its compact and sturdy design make it superior to all others for both marine and stationary use, this Corporation has secured it for a Columbian product.

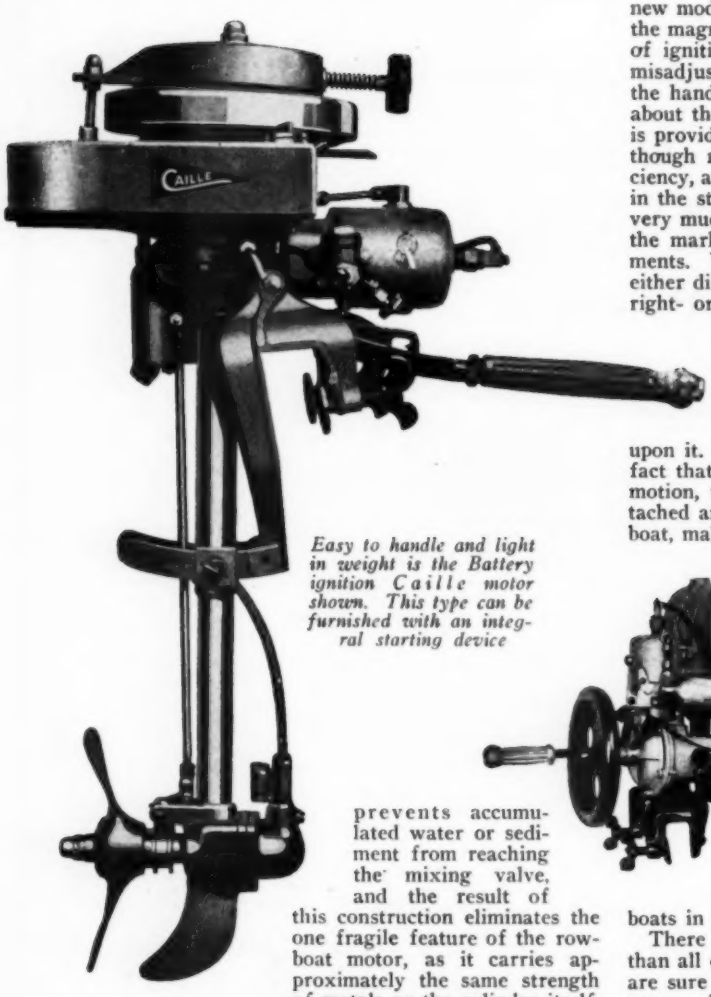
This offers a particularly attractive proposition to Marine Dealers as it covers not only the marine field, but the lighting and power field during the months when marine business is at a standstill. Secure your exclusive territory now.

COLUMBIAN BRONZE CORPORATION

522 FIFTH AVENUE **NEW YORK CITY**

Motor Boating on a Small Purse

(*Continued from page 27*)



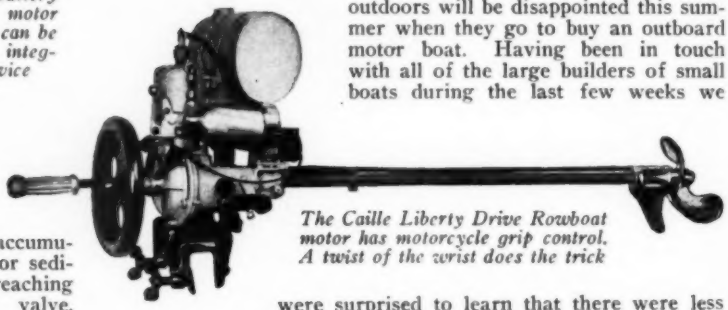
Easy to handle and light in weight is the Battery ignition Caille motor shown. This type can be furnished with an integral starting device

prevents accumulated water or sediment from reaching the mixing valve, and the result of this construction eliminates the one fragile feature of the rowboat motor, as it carries approximately the same strength of metals as the cylinder itself, and is scarcely more likely to receive damage from accidental shock than would the cylinder itself.

An entirely new mixing valve of proper capacity and design into which has been built a choking device, whose sole purpose is an aid in starting. This choking device is so arranged that the inflow of air is never entirely cut off, as it is obvious that the gasoline vapor cannot be drawn into the engine unless a suitable amount of air is drawn in to cause this gasoline to vaporize, and with the proper use of this built-in choke, the old priming operation and the resultant disagreeable feature of oily clothing and soiled hands has been entirely done away with, as has also the disagreeable feature of the heretofore ever-present gasoline and oil spray on the stern seat of the boat.

A new and highly improved magneto is supplied on this new model. The magneto has been greatly enlarged—both the magneto and electrical parts—solely to insure a margin of ignition strength sufficient to counteract a reasonable misadjustment. Appreciating that these machines go into the hands of operators who, in many cases, know nothing about the theory of their operation, this margin of safety is provided that they may still operate satisfactorily, even though not operating at their maximum strength of efficiency, and this additional strength immediately shows itself in the starting qualities of the motor, and continues to be very much in evidence throughout the life of the engine by the marked absence of the necessity for frequent adjustments. With this new magneto, the engine may be run in either direction, and shows equal strength whether running right- or left-handed.

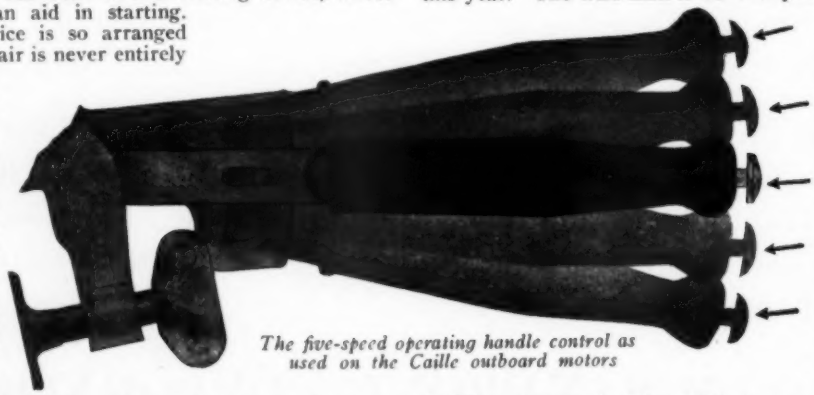
This rowboat motor steers by rudder, a feature fully appreciated by the experienced operator, but perhaps given only a passing notice by the inexperienced prospective purchaser. The rudder has been steering ships since ships were known, and in all these years man has been unable to improve upon it. The ease in which the boat can be handled; the fact that the boat is under control all the time it is under motion, the ease with which the rudder line may be attached and steering effected from the forward part of the boat, makes the rudder the one logical means of steering.



The Caille Liberty Drive Rowboat motor has motorcycle grip control. A twist of the wrist does the trick

A great many lovers of the great outdoors will be disappointed this summer when they go to buy an outboard motor boat. Having been in touch with all of the large builders of small boats during the last few weeks we were surprised to learn that there were less than fifty unsold or unordered outboard motor boats in stock with the builders on April 1st.

There is a bigger demand today for this type of boat than all of the other models of boats put together. There are sure to be a great many disappointed when the season opens. There is yet plenty of time for the building of many more boats of this type and the way boat builders are receiving orders shows that many of those who were disappointed last summer are not going to take any chances this year. The wise man is he who places his order early.



The five-speed operating handle control as used on the Caille outboard motors

It is our advice to those who contemplate purchasing such a boat that they get in touch with some first class builder at once and have a boat reserved for them when they are ready to use it. Delays are dangerous, as many people will have occasion to know before the summer is over.

A large boat-building concern in New York has made a special study of the outboard motor boat for several years, and are today perhaps building more boats of this type than all of the rest of the builders put together. After considerable

(*Continued on page 100*)

SKANEATELES BOATS

The Standard by Which Others Are Judged

OUR Outboard Motor Boats are absolutely the best outboard motor boats made in the world to-day. They are 16 feet long and have a beam of 4 feet. They are planked with selected white cedar. The stem, keel and transom are of selected oak. The decks are of black walnut, mahogany, cherry or butternut. The seats are of cypress. All fastenings are of copper and they are copper riveted and burred at the ribs in the lap-strake model; and the smooth-skin are riveted and burred at the bilge. The trimmings are of nickeled brass or polished brass; and one pair of selected spruce oars, 8 feet long, is included in the outfit. The finish is in the natural wood, with best spar coating. The boat weighs approximately 150 pounds. Price, $160, plus $16 war tax and $5 for crating. Price equipped with 2 H.P. Evinrude Motor, with built-in magneto and automatic reverse, is $275 f. o. b. cars, Skaneateles. Immediate or future shipment.

DINGHIES

Our stock models of Dinghies are 8-10-12-14 and 16 feet in length. They are of the best construction, finest materials, and the best models in use. These can be constructed for the use of either the inboard or outboard motor.

GENERAL SPECIFICATIONS

Oak keel, stem, frames, gunwales and transom. Planking, 5/16-inch white cedar, copper riveted and burred at ribs (laps copper nailed and well clinched), oak breast hook, two rowing thwarts and stern seat, cypress, two pair row locks, one pair spruce oars varnished, hoisting rings fore and aft, polished brass or nickel plated brass fittings. Outside planking, and inside above seats and decks, best spar varnish, floors painted and covered with varnished grating. Beam forty-two to fifty inches.

The 8- and 10-foot Dinghies have mahogany transom and all Dinghies are copper riveted at the ribs.

PRICE, ANY SIZE, $150 EACH, WAR TAX

When ordering a 16-foot Dinghy be sure and specify whether it is to be used with an Outboard Motor on it, as we make two Dinghies in this type, one having a large wide transom built especially for an Outboard Motor and the other with a decked stern. 16-foot Dinghy for Outboard Motor is $10 extra.

ST. LAWRENCE SKIFFS

Prices from $85 to $250, plus war tax and crating.
Let us send you catalogs.

Eighteen-foot raised deck cruisers, sailboats, dinghies, surfboats, yacht tenders, etc., always in stock. $75,000 stock insures immediate shipment.

SKANEATELES BOAT & CANOE COMPANY

Skaneateles, New York, U. S. A.

Builders of the finest row boats in the world

Absolutely No Vibration

IF you want to enjoy a summer of genuine relaxation, with no anxieties to mar your outdoor pleasures, equip your boat with the best rowboat motor—the motor that's always ready, never tired, never wants to quit—

The Great 2-CYLINDER KOBAN ROWBOAT MOTOR

The Koban takes you where you want to go and back, with no back-breaking pulling at the oars. It will easily "run away" from any other rowboat motor on the lake or river. Its 2-cylinder construction also does away with the continual vibration that makes riding unpleasant, opens seams and ruins rowboats. Special tilting device, for shallow water and beaching.

Write for catalog and full information. Agents and local dealers wanted.

Koban Manufacturing Co.

246 SOUTH WATER ST., MILWAUKEE, WIS., U. S. A.

The first 2-cylinder rowboat motor—the standard of its type—not an experiment.

ELASTIC SEAM COMPOSITION TRADE MARK

Manufactured by H. B. Fred. Kuhls

Keep Your Decks Tight

Elastic Seam Composition remains elastic and flexible, adhering to the sides of the seams and yielding to the swelling and shrinking of same. It will last from eight to twelve years, keeping the decks tight and wearing down with the planking.

We would be pleased to submit estimate for caulking and filling of Decks, guaranteeing same for a period of years.

ELASTIC COMPOSITION AND REPAIR COMPANY

H. B. Fred. Kuhls, Manager

6411-23 Third Ave., Brooklyn, N. Y.

Motor Boating on a Small Purse

(*Continued from page* 98)

experimenting, they found that a boat built of white cedar was the most practical. In order to get a boat that would be dependable under all conditions, whether on open water or small lakes, a boat sixteen feet long by four feet wide was found to be the most practical.

The next difficulty to overcome was the matter of price, in order to make it popular with everyone. In order to do this, it was necessary to make them on a standard production basis. Hundreds of them are being built right along. The boats are reinforced throughout in order to get vibrations down to a minimum. The smooth-skin boat, which finds favor in many localities, is riveted at the bilge and at all points that carry a strain. The weight of the boat complete is approximately 150 pounds. Its large, wide keel, on which planking is rabbeted, insures protection to the boat when it is being drawn upon a rocky shore and also that it will remain upon an even keel when resting in the boathouse or on the shore.

The list which follows contains complete details of all outboard motor boats as well as the little motors designed particularly to propel them, built by American manufacturers.

The Elto outboard motor in the folded position

Manufacturers of Outboard Motors

Adams Motor & Mfg. Co., 3914 Costello Ave., Chicago, Ill.
Arrow Motor & Mach. Co., 397 Market St., Newark, N. J.
Amphion Marine Engine, 645 So. Pierce St., Milwaukee, Wis.
Caille Perfection Motor Co., Detroit, Mich.
Elto Outboard Motor Co., Manufacturer's Home Bldg., Milwaukee, Wis.
Evinrude Motor Co., Milwaukee, Wis.
Gierholtt Gas Motor Co., Marine City, Mich.
Koban Mfg. Co., 241 So. Water St., Milwaukee, Wis.
Lockwood-Ash Motor Co., Jackson, Mich.
Motorgo Motor—Sears Roebuck & Co., Chicago, Ill.
Wisconsin Machinery & Mfg. Co., Milwaukee, Wis.

Detachable Outboard Motors

Motor	Horse-power	No. Cyl.	Cycle	Bore & Stroke	R.P.M.	Weight	Ignition
Arrow	3	1	2	2¼ x 3	750	80	Magneto
Amphion	4	2	2	2½ x 2½	1200	80	Magneto
Caille	2	1	2	2⅜ x 2½	700	85	Magneto
Caille	2	1	2	2⅜ x 2½	700	85	Battery
Caille Liberty	2	1	2	2⅜ x 2½	700	72	Battery or Magneto
Elto	3	2	2	2¼ x 2	1400	47	Atwater Kent
Evinrude	2	1	2	2⅜ x 2½	800	71	Magneto
Evinrude	3½	1	2	3¼ x 3	650	116	Magneto
Evinrude	4	2	4	2¼ x 2½	750	99	Magneto
Gierholtt	2	1	2	2¾ x 2½	750	50	Battery or Magneto
Joymotor	2	1	2	2⅜ x 3	850	85	Magneto
Koban	3	2	2	2⅜ x 2⅜	900	75	Battery or Magneto
Lockwood-Ash	2	1	2	2⅜ x 2½	800	70	Battery or Magneto
Motorogo	2	1	2	2⅜ x 2½	850	70	Battery or Magneto
Wisconsin	2	1	2	2⅜ x 2½	700	50	Battery or Magneto
Wisconsin	3½	1	2	3¼ x 3¼	700	90	Battery or Magneto

Manufacturers of Outboard Motor Boats

Bair & Edgerton, 11 Donohue St., Glen Cove, N. Y.
Barbour Boat & Pattern Co., Valley Park, St. Louis County, oM.
Belle Isle Boat & Eng. Co., East Jefferson & Parkview, Detroit, Mich.
Brooks Mfg. Co., Saginaw, Mich.
Cape Cod Shipbuilding Corp., Wareham, Mass.
Davis Boat Works Co., Sandusky, Ohio.
Everett Hunter Boat Co., McHenry, Ill.
Evinrude Motor Co., Milwaukee, Wis.
L. E. Germain, Saginaw, Mich.
Gidley Boat Co., Ltd., Penetang, Canada.
R. W. Harrison Boat Works, Toledo, Ohio
Sydney C. McLouth, Marine City, Mich.
Old Town Canoe Company, Old Town, Me.
Peterborough Canoe Co., Ltd., Peterborough, Canada.
Red Bank Yacht Works, Red Bank, N. J.
Sandusky Boat & Cabinet Works, Washington St., Sandusky, Ohio.
Seabright Dory Works, 491 Atlantic Ave., Long Branch, N. J.
Skaneateles Boat & Canoe Co., Skaneateles, N. Y.
Thompson Bros. Boat Mfg. Co., Peshtigo, Wis.
Toppan Boat Mfg. Co., 125 Riverside Ave., Medford, Mass.
Whittington Boat Co., Crisfield, Md.

Stock Boats for Outboard Motors

Manufacturer	*Length*	*Beam*	*Construction*
Bair & Edgerton	10'	3' 4"	Cedar planked, oak frame
Bair & Edgerton	12'	3' 6"	Cedar planked, oak frame
Bair & Edgerton	14'	3' 9"	Cedar planked, oak frame
Bair & Edgerton	10'	3' 8"	Lap strake cedar, mahogany trim
Bair & Edgerton	12'	4' 0"	Lap strake cedar, mahogany trim
Bair & Egerton	14'	4' 4"	Lap strake cedar, mahogany trim

(*Continued on page* 96)

Advertising Index will be found on page 126

The Perfect Spark Plugs for Outboard Motors

RAJAH SPARK PLUGS

WATERPROOF TYPE

THE Waterproof Rajah Plug was designed especially for use in exposed marine motors. For years it has been the preferred equipment for engines in all types of open boats. Now, with the growing popularity of outboard motors, the Waterproof Rajah is coming into greater demand than ever.

Waterproof Rajah Plug, Waterproof, Shockproof, Breakproof

$1.50

This plug is Waterproof, Shockproof and Breakproof. No amount of rain, spray or solid water can put it out of commission. It meets the requirements for a spark plug that will give trouble-proof service in the hands of the novice.

Standard Equipment in Elto Outboard Motors

The new twin-cylinder Elto Outboard Motor, Ole Evinrude's latest design, carries Waterproof Rajah Spark Plugs as standard factory equipment. In every feature of design and equipment Mr. Evinrude sought the best so his selection of the Waterproof Rajah shows the preference of a great designing engineer over every other plug on the market.

No matter what type of boat or motor you use, you deserve the superior service of Rajah Spark Plugs. When the highest grade marine engines like Speedway, Murray & Tregurtha, etc., supply Rajah Plugs for standard equipment—when many successful motor boat racers will use no other—you will be safe in confining your ignition equipment to Rajah, the plugs that make ***ignition absolutely sure.***

Waterproof Rajah Spark Plugs are Standard Equipment in the new Elto Outboard Motor

If your dealer does not have genuine Rajah Plugs, send us his name, tell us the size you want, and we will see that you are supplied, postpaid. If you are not sure of the size, tell us the name of your engine.

Rajah Terminals are used as standard equipment by most of the well known marine engine manufacturers

Standard Rajah Plug All Threads

$1.00

Thumb Nut — with all Rajah plugs unless Ball or Stud type preferred

Regular Fits any size cable

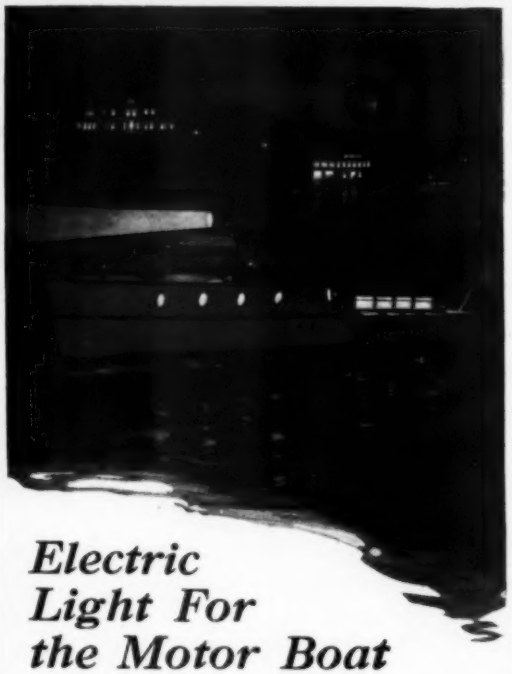
Thrust **Hook**

Furnished with ferrules to fit any size cable

Giant Rajah Plug, All Threads

$1.25

Manufactured by Rajah Auto Supply Co., Bloomfield, N. J., U. S. A.



Electric Light For the Motor Boat

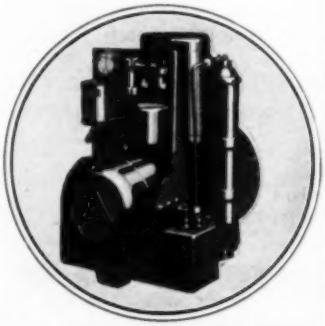
You can have electric lights—bright, cheery, safe—on your boat this summer.

Delco-Light is independent of your power equipment; it is compact, safe and simple to operate. Used successfully on yachts, cruisers, launches and sailing craft.

The upkeep cost is less than that of kerosene lamps.

There is a dealer and several of the 135,000 satisfied users in your vicinity. Or write for further information.

DELCO-LIGHT COMPANY
DAYTON, OHIO



Plants in 16, 32 and 110 volts to meet any requirements. Prices $295 and up, f.o.b. Dayton, Ohio.

DELCO-LIGHT

Over 135,000 Satisfied Users

Hippocampus Sees it Through

(*Continued from page* 24)

photographer standing by to catch a quartering view of us, we shoved off from the wharf at 5:55, and headed down the bay under power. Such wind as there was, was contrary, but as the glass hadn't been doing much of anything for several hours we figured on the unheralded approach of a northeaster. So when we had passed through the Narrows we headed for Gravesend Bay to lie for the night in the lee of Bensonhurst, of blessed memory.

In the morning the wind was blowing stiffy from the expected quarter, bringing with it a drenching downpour of rain, and the day seemed inauspicious for a cruise that will take us through the tropics in the full drip of the rainy season. Wherefore, we decided to devote Sunday to prayerful consideration of the last minute details which had been neglected, and first and foremost hauled in to Andy's gas dock at Ulmer Park to replenish our various tanks. In making the landing the wind caught our bow at about the time the ship had more sternway than she could comfortably carry, and we shivered the mizzen boom on the unyielding exterior of a 12-inch pile. Right away Al Chambers—

(But here let me interpolate a word about the duplication of "Al's" aboard ship. At first it was thought that when Squibb said, "Hey, Al" there would be confusion as to the identity of the Al intended. The difficulty has since removed itself, however, for when he says, "Al get your chow," I know he means me, and when it is, "Al, bear a hand here," I guess he means Chambers. So that is that, as the novelists are given to saying.)

After the carrying away of the mizzen boom, Al decided not to go ashore for a required suit of oilers, and collectively we put in the day rigging a new spar. Staging a foraging expedition to the Marine Basin where Chambers and I had mowed down countless hand-rail stanchions in the early days of the war, we met a person in authority who directed us to the broken radio mast of a sub-chaser and told us to take it when he wasn't looking. Useless for its intended purpose, this stick of knotless Oregon pine was ideal for us, and with Andy wielding the draw knife and plane while we looked on and marveled, we soon had a new boom that beats perfection itself. Then we rigged and shipped it, and at five of a wintry afternoon called it a day.

Monday morning, the first of May, offered every inducement for an early start, but sleep got the better of us, and it was seven o'clock before we cast off from the dock of the hospitable Anderson and stood down the bay under sail and power. Arrived in Ambrose Channel we shut off the motor, and cutting across to Gedney Channel, the northwest wind died a lingering death and we slatted about in the swell from the preceding day's blow. Whereupon the companionway ladder was again moved aside to give access to the little 10 h.p. mill, and we chugged off for Scotland Lightvessel to take our departure for the long journey.

The wind remaining practically dormant, we motored down the Jersey coast for a matter of three hours with the jib and jigger just filling, and then a gentle southerly breeze sprang up and we hoisted the mainsail and shut off the power. Alternately reaching in toward the coast and beating out to sea, we tacked about all the afternoon, evening, and night, and in the morning, with Barnegat Light slightly abaft the beam, had made less than fifty miles for the day's run. But Squibb and I had acquired a little experience in handling the ship under sail, and Chambers was not dissatisfied with our progress.

Day dawned clear, but the sky was almost immediately overcast with a thin pall of clouds that boded no good for the next twenty-four hours' run. Then, although the wind hauled gradually to eastward, the clouds burned off, and we doffed a few sweaters and prepared to enjoy life on the ocean wave.

The little patent log which followed Typhoon on Bill Nutting's carefree excursion to the Cowes Regatta, and which had been loaned us for the coast-to-coast voyage, settled down to business and clocked us off at five knots, thereby establishing the first part of our prediction that Hippo is slow but sure. Atlantic City, Ocean City, and a few more of the Jersey coast resorts were gradually brought abeam and receded to the most attracting bearing—that of the starboard quarter—and at sundown we were abreast of Hereford Inlet Light, about four miles to leeward of us.

That sunset is the one of all others that I'll always remember. Having nothing about it to delight the eye of a Turner, it was calculated solely to trouble the mind of a navigator. At that, it was a sunset only by conventional application of the word, since the sun never showed his face after he had sunk below an angle of twenty degrees. But he cast an abortive rainbow in the eastern sky, and tinged the clouds to a dull bluish hue that reminded me of all the sea storms I've ever read about. Nimbus clouds scudded across the sky in two directions and rolled themselves into mares' tails, and slowly the wind swung more into the northeast quadrant and gained in vigor.

(*Continued on page* 104)

Advertising Index will be found on page 126

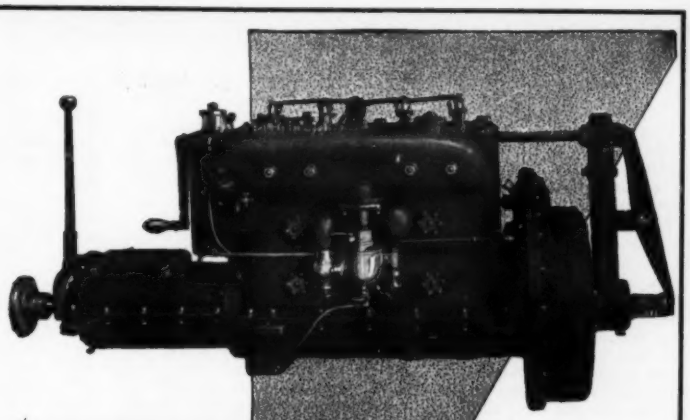
One of these Will Meet Your Needs

Somewhere in the line of Lockwood-Ash Marine Engines is one that will meet your needs.

From the clean-cut, sturdy 2 h.p. outboard engine to the big four-cylinder power plant are varieties in size to cover a wide range of power and speed requirements.

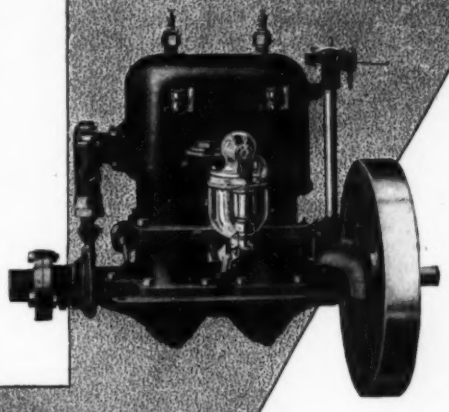
Fourteen years of experience enable Lockwood-Ash officials to act as your consulting engineers in boat engines.

Prompt and serious attention to every inquiry is a Lockwood-Ash rule.



4-Cylinder 4-Cycle

Big brother of the Lockwood - Ash Engine family, a highly developed marine power plant. Rugged and dependable. Delivers up to 20 h.p. Built with or without rear starter.

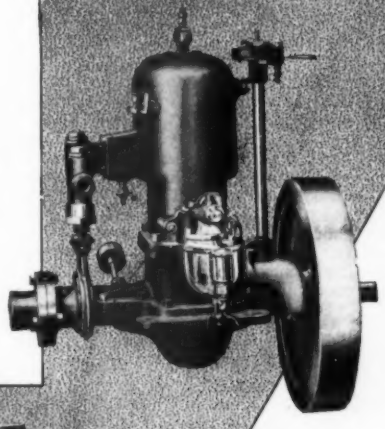


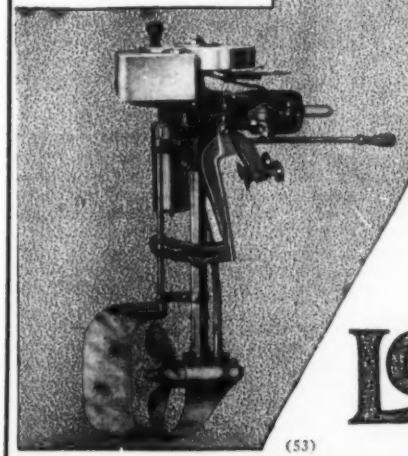
2-Cylinder 2-Cycle

A light, compact all-purpose engine of few parts and readily accessible. Made in three sizes, 6-, 8- and 12-h.p. The largest size should deliver up to 15 miles per hour.

1-Cylinder 2-Cycle

A simple, dependable in-board engine for work or pleasure. Easy to start; easy to operate and care for. Made in 2½ and 4 h.p. sizes.





Outboard Row Boat Engine

This portable, 2 h.p. engine is a favorite for both pleasure and work. Easily attached to a row boat. Full of pep and thoroughly reliable.

Why Lockwood-Ash Engines Are Worthy of Your Choice

Lockwood-Ash Marine Engines are products of an institution which always has placed quality first. Experience has pointed out the sizes that make up the well-selected line and the quality standard has dictated the thorough workmanship which is in every Lockwood-Ash Engine.

Lockwood-Ash Engines are mechanically sound—not experiments. They are built simple in principle and strong in practice.

Ask for the Booklet

Ask for the booklet that tells all about Lockwood-Ash Engines. Also ask about the 30-day trial plan.

LOCKWOOD-ASH MOTOR CO.

2107 Jackson Street
JACKSON, MICHIGAN

LOCKWOOD-ASH MARINE ENGINES

(53)

Hippocampus Sees It Through

(*Continued from page* 102)

Just before dark we headed into it and doused the mainsail. Then, thanks to Chambers' foresight, we used the ends of the backstay sheets, the main sheet, and a couple of stray lines to quadruple lash the boom; and he generally saw to it that everything was snugged down for the night.

For one sufficient reason or another I made no contemporaneous entries in the ship's log, but it was somewhere around nine o'clock when we sighted McCries Shoal lighted buoy off Cape May and laid a southwesterly course for it. The breeze was then blowing about five in the Beaufort scale, and the wherry, towing at the end of a two and a half-inch painter, was having a merry time. Alternately it sagged back on the line and charged down on us from the peak of a wave, and when it had once missed our counter by inches we lengthened its scope to forty feet to avoid a rear end collision. At ten-five we brought our buoy abeam and headed away on a SxE course for Fenwick Island Shoals Lightvessel, and somewhere between that moment and the next Chambers called down the hatch that the wherry had gone adrift. Even at that early hour the blackness of the night and the condition of the sea were such that search for it was useless. Things were getting pretty thick.

Although we had already shaped our course for the lightvessel I had remained below studying the entrance to Delaware Breakwater Harbor, and concluding that with an ebb tide and half a gale I didn't like the looks of it. The loss of the tender now decided me that the night called for plenty of sea room, and with Al's and Paul's concurrence we continued on our way. I may be hopelessly wrong in my opinion, but I believe that the difference between riding out a storm and scurrying for a strange harbor in the dead of night is just this: When you're getting a severe drubbing off soundings the worst has yet to happen; but when you miss the entrance to a harbor and find yourself in the breakers your cup of misfortune is full and running over.

So, taking the wind and water heavily from a little abaft the port beam, we held our course for the lightvessel, twenty-five miles distant. The wind came without gusts, but with an ever-increasing strength, and by eleven-thirty I mentally put it down for seven in the Beaufort scale. Then, as the half hours dragged by, I raised the ante one by one, and at the height of the storm figured that we were receiving all that a 65-mile blow had to offer us. But the ship was taking it gamely—and traveling. When you log off seven knots under jib and jigger, displaying something less than a third of your total sail area, you may say that the wind is blowing and that you're taking full advantage of it.

So we traveled until the tiller trembled under the rush of water past the rudder and the boom vibrated from the transmitted strain of the wind in the jib. And we dipped our lee rail under, and took solid water alternately over bow and port quarter until the cockpit scuppers failed to carry off the accumulated inflow of water and the light of the binnacle, wedged in a corner of the cockpit, was extinguished. But always we felt confidence in the ability of Hippocampus to stand up under her punishment.

Not always did we have this feeling of confidence in ourselves, and when, two hours before we were supposed to pick up Fenwick Lightvessel, we saw a gleam on our starboard bow, we momentarily thought that we had erred in the course. The unwelcome light showed itself when we were crossing the southern end of Five Fathom Bank and the rollers were breaking over themselves until the whole sea was a smother of phosphorescence, and for a time we thought ourselves to be in the breakers. At this juncture we started the Palmer which, despite greasy flywheel and dampened spark plugs, kicked off with accustomed celerity and let it idle until we had again become sure of our position.

This assurance was given us by indirection when a green starboard light showed flanking the white light and we made it out to be a tug bound for the Delaware River with but one range light burning. So incessant and violent was our motion that the approaching light had the fixity of a shore beacon.

Our own running lights had long since given up the ghost, and we had made no attempt to keep them burning. The height of the evening's performance came when Chambers, going below for a smoke, was followed down the companionway by the fringe of a comber which extinguished the acetylene gas light. Both before and after that happening the binnacle light puffed out, and continually, until dawn, spray slopped down the half open hatchway until the bilge and cabin deck were an agitated pool of turbid water. Squibb, wedging himself in place on a pile of saturated cushions and remaining below because we were minus a suit of oilers and the need for Chambers on deck was great, established for himself the reputation of sea-going sailor. To Chambers belongs the credit of pulling us through a nasty situation, and to Squibb the stormproof stomach. Mine is equal to any emergency on deck, but it does have its limits, and I kept the topside.

At a little before two we sighted Fenwick Lightship dead ahead and felt a load lift itself from our shoulders. The wind still blew hard, being now accompanied by ominous periods of calm, and the spray still drove through our oilers, but we knew that upon sticking it out for only one hour more, we could head off on a SxW course and take the sea at a better angle. At 2:50, our leeway carrying us down so that we were unable to round the lightship, we brought it abeam on the port hand and squared away on the new course. In a lull a few minutes later the little ship lost steerage way and jibed on the reopening of hostilities. Having the tiller at the time, I thought that I had committed a nautical faux pas which would be fatal, but the spars, sails, and rigging stood the strain, and the doughty sailing master of our crew brought her about on the proper tack without difficulty.

From then on until dawn the wind continued stiff, but at sunrise it slacked off in strength and by eight A. M. we were tumbling about in what would have been a flat clam if by any stretch of the imagination the mountainous waves could be termed flat. At any rate, there was not enough air to keep the sails filled as we rolled, and again the motor was started. Squibb had taken the morning watch while Chambers and I indulged our passion for sleep, and so ably did he heed my injunction not to make anything to westward of the course that at eight bells when I came on deck we were twenty miles from anywhere.

Laying a course in the general direction of North America we presently picked up Winter Quarter Shoal buoy and there altered to make the bell marking the southern end of Black Fish Bank. Meanwhile, Assateague Light had showed above the horizon and we welcomed the thought of hot chow and rest in the anchorage at its base. Still under power, but with a repetition of the preceding day's easterly springing up to fill the jib and jigger, we kept on our way until at 1:10 in the afternoon of Wednesday we lowered sail at the entrance to the anchorage.

From there it was a run of a few minutes to a quiet mooring at the new plant of the Chincoteague Fish Oils Company, where we secured and received a cordial greeting from the manager. Eriksen is a sea-going Swede of varied experience, who, having heard our story, corroborated our modest claim of a 65-mile breeze, and said, "You boys ban salty. I knew it when I saw you picking your way in between the shoals. And your boat ban salty too." When Eriksen said this we felt that it was praise indeed.

That night we lay in, and the southeast wind only vaguely disturbed our slumbers. Nor were we bothered the next night when another northeaster, accompanying a mendaciously rising glass, swept across the anchorage and bobbed first our bowsprit and then our bumpkin under. Friday, the sea still tumbled about outside and roared on the beach of Assateague, and the sky remained troubled; and Saturday, when conditions for sailing seemed ideal, the mouth of the wind bag closed and not enough air stirred to flutter our S. C. pennant at the main.

But Sunday morning a fine sailing breeze from the northwest greeted us as we rolled out of our bunks, and with a great stir of activity we bolted one of Squibb's sea-going breakfasts, singled our lines, started the motor, cast off, and headed for sea. If other amateur mariners put in to Assateague Anchorage and are accorded half the cordiality that we received from all hands at the fish plant they will look back on the sojourn there as a most pleasant one. We occupied our time between showers airing bedding and clothes (my clean whites, having been on the lee side in the storm, will never be the same again) and in turning sheets and halliards to lengthen the life of them.

Rounding Fishing Point and taking our departure from the red and black spar marking a two-fathom spot at the entrance, we set all sail, shut off the power, and ran free under the impulse of a fine sailing breeze. Looking back, we saw how inaccurate is the lighted range supposed to mark the best water into the anchorage, and I made a note in the log to warn seafarers entering at night to give a wide berth to the light on the point. The spit has gradually crept northward until the light which formerly marked the best water now lures the stranger into an overland expedition.

All that day we had perfect conditions for sailing, the sea being smooth with an offshore wind, and I employed the morning brushing up on my navigation. Working two St. Hilaire sights from the Brandis sextant and catching the sun on the meridian at noon, I was able to check the accuracy of the instrument by objects on shore. It checked. By sundown, when we were bringing Cape Charles abeam, we had logged fifty miles and

(*Continued on page* 106)

"CONSOLIDATED YACHT TENDER"

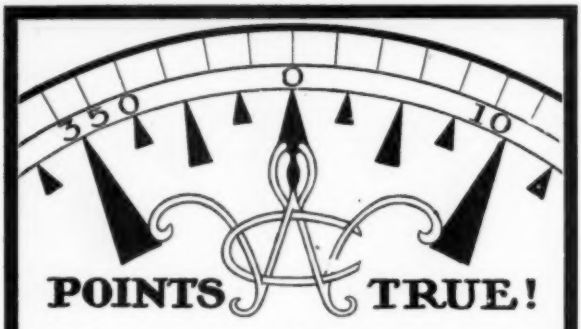
YACHT owners the world over appreciate a carefully balanced, sturdily constructed power tender. Reliable under all conditions, it displays a seemingly limitless power reserve —fast, seaworthy and safe.

Built with the same grace of line and nicety of appointment that characterizes all "Consolidated" pleasure craft.

We are now exhibiting in our showrooms at Morris Heights, Tenders for immediate delivery.

Complete specifications sent upon request

CONSOLIDATED SHIPBUILDING CORPORATION
MORRIS HEIGHTS, NEW YORK CITY



POINTS TRUE!

AS your compass guides you safely to port, so the mark *WC* guides you to Dependable Motor Boat Fittings. The

WC Oil Compass

is constructed on scientific principles by skillful workmen. Its action, accuracy and steadiness are guaranteed under all conditions. Built to withstand the jars of power craft, the dial is adjusted to remain steady in a sea way and responds quickly to a change in direction. Every Compass carefully tested before shipping. 2, 2½, 3, 4 and 5 inch dials. At your dealer's or write us.

Send 20c in stamps for celluloid Course Protractor. "Compass Talks and Tests" sent free. Tells how to box the compass, contains deviation tables, and other practical information for compass users.

WILCOX, CRITTENDEN & CO., Inc.
4 South Main Street Middletown, Conn.

Vibration

caused by
Unbalance of Shaft or Propeller
is Preventable

THE owner of a motor boat doesn't want that annoying vibration, causing serious discomfort to himself and guests.

The builder of a marine motor can eliminate that *vibration,* by buying an

MA Balancing Machine

and making certain that crankshaft and propeller are in balance,

WE SOLVE MA VIBRATION PROBLEMS
Trade Mark Registered

Statically and dynamically before shipment from the factory.

Mr. N. W. Akimoff's initials are our trademark and your protection.

VIBRATION SPECIALTY COMPANY
Harrison Building Philadelphia, U. S. A.

Hippocampus Sees it Through

(*Continued from page* 104)

were all set for a quick run up to the Elizabeth River and a full day ashore in Norfolk. But the wind passed quietly out and in the succeeding twelve hours we made good less than twenty miles.

Then, Monday morning, having breakfast and put the ship in harbor trim—a process involving the stowal of wet shoes, trousers, shirts, and miscellany—we put the motor into action and proceeded to a quiet mooring in the Hague. During our short stay here automobilists, easing along Mowbray Arch, have exclaimed, "Oh, there she is," and pedestrians have done us the honor of coming aboard to inspect. As I started to write this, a big Navy plane, which had flown from New York in about the time it took us to cover the last leg under power, flew overhead and one of her observers leaned over the side to semaphore "Good luck" to us.

We have been dined (and I almost said wined) by the most hospitable strangers, and now, being freshly provisioned and fueled we are preparing to get under way for Charleston, with possible stops for breath at Beaufort, Southport, or wherever we catch the next drubbing from Father Neptune. The little hooker will stand it.

The next installment of the cruise of Hippo from New York to San Francisco will appear in the July issue of MoToR BoatinG.

Yard and Shop

(*Continued from page* 44)

C-Y-C Now a Columbian Product

The Columbian Bronze Corporation, of 522 Fifth Avenue, New York City, announces that it has purchased the C-Y-C Electric Generating Plant from Carlton, Young & Catlin, Inc., and will immediately put these compact little units into quantity production.

The opportunity to manufacture and distribute a Generating Plant having all of the splendid advantages of the C-Y-C was too good for a strong corporation to miss and the new company is starting in with a great deal of enthusiasm. A Generating Plant operating perfectly on kerosene, generating 1½ KW. for power as well as light, having a 5 h.p. engine, which is 2 h.p. in excess of the generator requirements and having the engine parts interchangeable with Ford parts, should prove a very attractive proposition to dealers, to say nothing of users, and the corporation anticipates a ready sale for its product.

Electric lighting which has been used quite extensively on private yachts is becoming a necessity on commercial boats and its use particularly on fishing boats for night fishing is growing rapidly. The C-Y-C outfit, generating 1½ kw. provides an abundance of current, not only for light but also for starting devices and even for cooking.

Marine dealers will find a particularly good opportunity in handling these sets as they not only have the Marine field to cover during its season, but during the winter months the demand for farm lighting outfits, lighting plants on private estates, clubs and other isolated places where municipal current cannot be obtained, offers a lucrative field for any dealer securing his territory rights.

The reputation which has been so thoroughly established for Columbian propellers and other products will be well sustained in the new generator sets.

New Sea Sleds for High Speed

A new thirty-foot sea sled to be equipped with a pair of 200 h.p. Hall-Scott marine motors is being built for H. B. Plant for service on Long Island Sound. This sea sled was especially designed for this power plant by Mr. Hickman and follows the general characteristics of the record holding sea sled Orlo II. This boat while not designed particularly for extreme speeds will be seaworthy and very fast. A speed of 43 m.p.h. is guaranteed and will probably be exceeded.

Another sea sled is to be built in England under license from the Sea Sled Company, Ltd., for Claude Grahame-White, the noted English aviator. He had a number of rides in Orlo II at Florida during the winter and was carried at high speed in rough water on the gulf stream. Mr. Grahame-White stated no other boat in the world of similar size could approach this performance and that the sensation, coupled with the safety and comfort, was much better than that of flying. His sea sled is to be equipped with a pair of very powerful Rolls-Royce motors and will be forty-two feet in length. The boat is a well worked out piece of design. The helmsman's position is above instead of behind the motors, as well as being let into the engine covers near their forward end and protected by a windshield. The main passenger cockpit is forward, away from any sound of the motors, and is to be fitted with deep leather upholstery, refrigerator, etc., and well protected by windshields.

Advertising Index will be found on page 126

Hacker-Craft

The Latest Hacker Wonder Boat

This double cockpit 28-foot wonder boat is the latest work of John L. Hacker, who claims it his greatest achievement in his experience as a naval architect. Five passengers can ride in perfect comfort, free from all noise, dirt, and spray, and the sensation is such that cannot be had in any other type of boat.

This little outfit will turn in its own length, and will not bury its nose, like other boats on short turns. Has been proven by test a perfect sea boat, and the equal of most 35-foot boats in every way. It is simply a wonder boat.

This outfit is powered with a four-cylinder Hall-Scott motor, which drives it smoothly, at a speed of over 30 miles per hour. It is a solid mahogany job throughout. Has high well upholstered backs, allowing the maximum of comfort. Has full controls in forward cockpit and is a first class fully equipped outfit in every way. We can make *good delivery on the next job.* Full particulars will be sent interested parties upon request.

ADIEU. Winner Fisher Trophy at Miami. We will duplicate this job with greater speed guarantee for the next race at Buffalo. If interested act quickly.

SPECIAL—Have still a 29-foot special WE-WE type for quick delivery. ALSO, a special all mahogany 21-footer. These will not last long. Write quickly.

We will figure on any high class proposition in a high speed outfit. Quality, performance, and speed guaranteed.

HACKER BOAT CO.

Shops: Detroit & Mt. Clemens, Mich. Office: 1525 Crane Ave., Detroit

GENUINE
HARTHAN
TRUE SCREW
PROPELLERS

The principle of a True Screw is strictly followed out in the patterns from which all genuine Harthan Propellers are made. This type is known to be the most efficient.

Harthan wheels are made of a special bronze composition, very tough and strong. This allows a very thin blade, the edges of which are brought down very sharp, which, with the extra high polish, reduces the power-absorbing element to a minimum.

We can supply propellers with two or three blades, in practically any pitch, either right or left hand.

Look for the Trade-Mark on Each Blade
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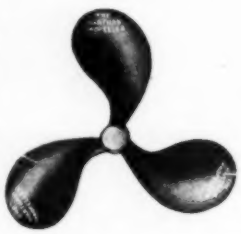
1100 Willow St.,
TRENTON NEW JERSEY
Representatives
NEW YORK: Topping Bros., 122 Chambers Street.
PHILADELPHIA: F. Vandercherchen's Sons, 7 N. Water Street.



Huff, Daland & Company

announce the completion of their facilities for the production of high grade

Motor Boats and Flying Boats

Mr. Joseph Leyare, well known among boat owners as the proprietor of the former Leyare Boat Works of Ogdensburg, has been retained as designer and superintendent of the motor boat department.

The personnel of this organization combines experienced administrative officers and boat builders of unusual skill.

Let us figure on your 1921 boat.

HUFF, DALAND & COMPANY, Incorporated
OGDENSBURG, NEW YORK

Motor Boats Flying Boats Airplanes

MoTor BoatinG's *Correspondence Course Still Going Strong*

(*Continued from page* 16)

"I think very highly of your navigation course. I believe it is a great help to the sport and hope that a lot of these porch sailors who get out once in a while will be benefited by it and that they will pay strict attention to the rules of the road."

GEORGE SCHUMAKOFF, Vallejo, Cal.

"One night I was nearly run down in the darkness by the scow being towed by a tug. Had I not known, from studying your book, that two white lights on the tug's mast meant a tow, I would have been run down."

ARTHUR E. SUNNY, New York, N. Y.

"I dropped off to reduce expenses, but cannot resist the temptation to have a hand in your correspondence course for motor boatmen."

JOHN K. MURPHY, New Haven, Conn.

"All my life I have been very fond of all kinds of boats and craft and this affords me an opportunity to learn something I really enjoy."

FREDERIC LEWIS, JR., Chicago, Ill.

"I have been fooling around motor boats ever since I have been able to walk with any degree of stability and your valuable magazine has supplied me with much useful information in the past. This is one of the most valuable services you could possibly extend to motor boat owners, and I think that it will be one of the greatest of indoor sports to follow up the lessons as they appear."

STEADMAN G. APPLEGATE, Philadelphia, Pa.

"I wish to say that I find the questions an excellent source of exercise for the imagination, and apparently so designed as to place the answerer in the very position in which he would many times find himself in a busy harbor. Admitting that, although I am more or less familiar with the Navigation Laws of the United States, especially those enforced by the Steamboat Inspection Service, I am only a very amateur navigator, I have welcomed the opportunity to learn and to be tested in some way while I am learning."

MASON S. NOYES, Baltimore, Md.

"This, I think, is just what 90% of the motor boatmen need and not one should let such an opportunity get by without enrolling. A course of this kind should be worth almost any price to one who operates a boat of any kind, whatever power or sail."

WILLIAM A. BUTLER, Riverside, R. I.

QUESTIONS FOR CORRESPONDENCE COURSE

LESSON No. 4
(Published in May MoToR BoatinG)
Types and Uses of Buoys, Various Types of Sailing Vessels
Answers should be sent to the Editor of MoToR BoatinG, 119 West 40th Street, New York

1. Should it be taken for granted that buoys are always where they should be, or where the charts show they are located?
2. How may spar buoys be colored?
3. How may can buoys be colored?
4. How may nun buoys be colored?
5. How are red buoys numbered?
6. How are black buoys numbered?
7. Are buoys painted red and black numbered?
8. Are buoys painted black and white numbered?
9. What colors are used on an obstruction buoy?
10. What colors are used on a channel buoy?
11. On which side are red buoys left when entering a port or harbor?
12. On which side are red buoys left on leaving a port or harbor?
13. On which side are black buoys left when entering a port or harbor?
14. On which side are black buoys left on leaving a port or harbor?
15. When entering a port or harbor on which side do you leave buoys with even numbers?
16. When leaving a port or harbor on which side do you leave buoys with odd numbers?
17. Do you pass close to or far away from a buoy colored with black and white vertical stripes?
18. Do you pass close to or far away from a buoy colored with red and black horizontal stripes?
19. When off shore, going down the Coast from Maine toward Florida on which side do you pass red buoys?

(*Continued on page* 110)

Advertising Index will be found on page 126

Joes Gears Share In Another Gar Wood Achievement

(Copy of Telegram)
Detroit, Mich.
May 10, 1921.

"Snow & Petrelli Mfg. Co.,
New Haven, Conn.

The Smith twin six motors in Gar Junior Second were fitted with Joes Gears especially adapted to this motor when record run from Miami to New York was made and they proved entirely satisfactory.
(Signed) GAR WOOD."

The Smith Marine Twin Six Motors are comparable in size and horse power to the Liberty Motor which develops 450 H.P. maximum. This boat has two motors and two No. 142 Joes Gears weighing about 160 lbs. each. The speed maintained by the Gar Junior Second from Miami to New York beat that of the Miami-New York Express. The trip was made via the open sea.

A pair of Joes Gears handled the 900 H.P. of the two twin six Liberty engines that drove Miss America (shown above) to victory in the Harmsworth Trophy race last year.

Nearly all of the important races in recent years have been won by boats that depended upon Joes Gears for their power transmission.

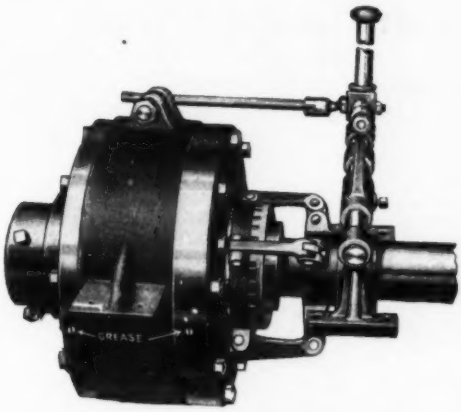
Put your racing gear problems up to us.

The Snow & Petrelli Mfg. Co.

156-B Brewery Street, New Haven, Conn.

AGENTS

New York City—Sutter Bros., 44 Third Ave., Service Station Foot of East 92nd St., Brooklyn.
Philadelphia, Pa.—W. E. Gochenaur Mfg. Co., 631 Arch St.
Detroit, Mich.—Henry H. Smith & Co., 334 Jefferson Ave.
Chicago, Ill.—W. L. Masters & Co., 229 North State St.
New Orleans, La.—Arthur Duvic's Sons, 130 Chartres St.
Southern Calif.—Fellows & Stewart, Inc., Wilmington.
San Francisco, Calif.—A. G. Hegben, 440 Market St.
Seattle, Wash.—Pacific Marine Engine Co.
Toronto, Canada—A. R. Williams Machinery Co.
Montreal, Canada—The Pyke Motor & Yacht Co.
Newfoundland—John Barron & Co., 241 Water St., St. Johns.
England—J. King & Co., 10 Church Row, Limehouse, E. London.
Norway—Arendahl Motor & Machine Co., Arendahl.
Turkey—Societe Generale d'Automobiles, Constantinople.



JOES
REVERSE
GEAR

80%—88% Reverse Speed Ratio

Write for catalog describing Joes Gears for every need and speed, Safety Rear Starters, One-Way Clutches, etc.

MEMBER

PRICES REDUCED and GUARANTEED

Our revised MARINE CATALOG No. 103A is ready for distribution. The Discount Guide which accompanies it shows price reductions which offer strong inducements to the thrifty buyer.

In order that you need not defer ordering in expectation of further declines in value, which are unlikely, we will GUARANTEE our prices against market decline until July 1, 1921.

Send for the New Catalog. Forwarded free to boat owners.

GEO·B·CARPENTER & CO.

MARINE SUPPLIES

200 W. Austin Ave. Chicago

MOTOR BOATING'S *Correspondence Course Still Going Strong*

(*Continued from page* 108)

20. If on the chart you saw a buoy marked S4, what kind and color of a buoy would you look for and on which side would you pass it when entering a harbor?
21. If on the chart you saw a buoy marked N6, what kind and color of a buoy would you look for and on which side would you pass it when leaving a harbor?
22. If on the chart you saw a buoy marked C5, what kind and color of a buoy would you look for and on which side would you pass it when at sea, running from Cape Hatteras to Cape Charles?
23. Show by means of a rough sketch how a buoy which is used to indicate the center of a channel is shown on the chart.
24. Show by means of a rough sketch how a buoy which is used to mark a rock or isolated danger is shown on the chart.
25. Show by means of a rough sketch how a black can buoy is shown on the chart (give it an odd or even number as would be proper).
26. Show by means of a rough sketch how a light buoy is indicated on the chart.
27. Show by means of a rough sketch how a bell buoy is indicated on the chart.
28. Show by means of a rough sketch how a buoy which is both a bell buoy and a light buoy is indicated on the chart.
29. Describe the light characteristics on an occulting light buoy.
30. Describe the light characteristics on a flashing light buoy.
31. A buoy on the Hudson River is marked FL. GN. EV. 3 SEC. Describe this light.
32. A buoy on the chart is marked FL. W. WHISTLE. Describe the characteristics of this buoy.
33. If you are in doubt on which side a buoy should be passed how do you determine it?
34. What Government publication gives you complete information about all buoys?
35. If you find a buoy which is not in its proper location or a light buoy whose light is extinguished at night, to whom do you report this?
36. Describe the rig of a cat boat.
37. Describe the rig of a yawl.
38. Describe the rig of a sloop.
39. Describe the rig of a ketch.
40. Describe the rig of a brig.
41. Describe the rig of a brigantine.
42. Describe the rig of a schooner.
43. Describe the rig of a bark.
44. How does a yawl differ from a ketch?

MANY CORRECT PAPERS RECEIVED

The following whose papers were received during April have passed Lesson No. 1:

A. F. Alexander, E. C. Barnes, G. Bissett, E. Brown, Dr. F. G. Brown, L. I. Butts, B. P. Boell, F. Barrows, E. E. Beeck, W. S. Bosley, A. R. Burr, A. M. Burr, L. Chapman, R. Caine, R. Crosthwaite, H. Conklin, E. Conner, A. L. Coffey, Jr., F. Cunningham, J. W. Campbell, W. Campbell.

C. Downs, J. Donnelly, F. Dunnels, W. Dwisdill, T. Dolan, F. Engelmann, I. S. Ellsworth, W. M. Foster, W. R. Folsom, W. R. Goodale, F. D. Greene, J. E. Gerich, H. Greinert, C. F. Haden, W. T. Hamlin, R. Histand, F. Hoch, J. A. Howland, F. Jackson, A. D. Jordon, L. G. Johnson, E. H. Kershaw, J. A. Kraven, J. R. Leonard, G. Long, J. F. Lowcock, W. B. Landreth.

Capt. J. McCulpin, J. Manning, A. E. Marx, F. Mitchell, E. Mattison, W. Monroe, G. B. McCluskey, J. A. McClary, S. Morley, W. M. McVey, E. Mathews, K. I. Murphy, F. L. Moore, W. W. Nichols, J. C. Nowell, E. J. O'Beirne, F. O'Beirne, W. N. Pharr, A. Peay, P. J. Pollnick, H. Pease.

L. P. Richardson, F. E. Roberts, B. Roberts, A. M. Russell, R. Schultz, Dr. R. L. Sexton, H. L. Stanley, A. Sunny, T. Steiniger, E. Swayne, W. Blood Smythe, H. H. Sellew, P. Schneider, J. L. Saegmuller, S. Steinmetz, W. H. Taylor, O. A. Thomas, S. H. Thomas, G. H. Thurston, E. E. Torchio, J. A. Weber, L. M. Ward, K. Wirnsch, D. E. Weaver, M. O. Whitney, D. E. Westervelt, L. Voight.

The following whose papers were received during April have passed Lesson No. 2:

J. Abt, A. Anderson, M. Anderson, R. Andren, A. Aycrigg, P. S. Benedict, Dr. A. B. Bennett, U. L. Berger, F. H. Berry, J. Bertram, J. Bister, W. Bliss, Henrich Boche, L. F. Brower, J. C. Broadhead, C. A. Bradley, H. F. Brown, C. E. Burch, Dr. F. G. Brown, B. P. Boell, F. Barrows, W. W. Bohm.

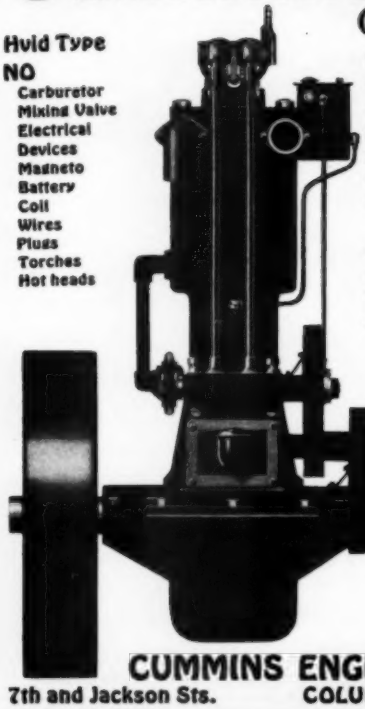
J. Calvert, F. S. Cheney, M. Cibener, G. M. Clubb, L. I.,

(*Continued on page* 114)

Cummins Oil Engines

Hvid Type NO

Carburetor
Mixing Valve
Electrical Devices
Magneto
Battery
Coil
Wires
Plugs
Torches
Hot heads



OPERATE on any free-flowing low grade fuel, such as kerosene, distillate and most grades of crude oil. More simple and reliable than a gasoline engine and cost only 1/6th to 1/10th as much for fuel.

Can be started cold without priming in any weather. Ignition solely by compression. No fire risk.

Prompt deliveries on single cylinder, 7-8 H.P., and double cylinder 14-16 H.P. Bore 5", Stroke 7½".

Write to-day for prices

CUMMINS ENGINE CO.

7th and Jackson Sts. COLUMBUS, IND., U. S. A.

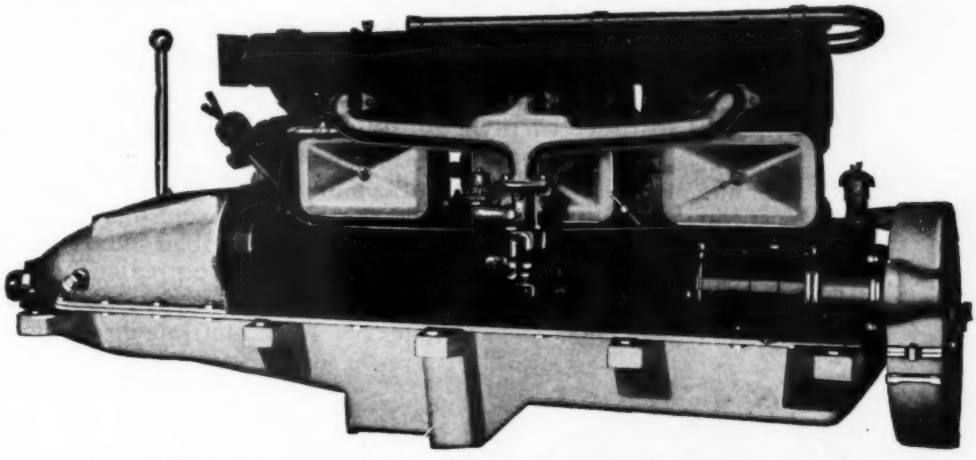
Advertising Index will be found on page 126

Scripps

"The Motor That Crossed the Atlantic"

A REAL PRICE SLASH

SCRIPPS—the best the market affords for less money than the price of an ordinary engine of similar power and equipment.



By building salesmanship into the product itself, the volume of Scripps business has steadily grown and the strength of Scripps distribution is shown by the fact that during the late period of depression when many industries were shut down flat, Scripps production continued on an upward scale, thereby further reducing production costs and keeping manufacturing and business overhead at low levels.

Effective June 1st a new revised schedule of prices for the season of 1921-1922 is announced covering the motor fully equipped as illustrated with two unit starting and lighting, storage battery, enclosed oversize reverse gear, high tension magneto ignition, in fact the best of everything in motor and equipment, f. o. b. Detroit:

Model D-2, medium duty 10-12 H.P., semi-speed 15-18 H.P., $850.00
Model D-4, medium duty 25-40 H.P., high speed 40-60 H.P., 1250.00
Model D-6, medium duty 35-55 H.P., high speed 60-85 H.P., 1750.00

Nothing has been reduced but the price, the quality is higher than ever before, a better engine cannot be had at any price. The "D" Series is particularly noted for an unusually heavy Crankshaft, large oversize "Ring-true" bearings, pressure lubrication, more power and pep than shown by any other motor of like bore and stroke, unusual operating economy, and the stamina for which Scripps products have been known for years. The new prices show better value than even pre-war figures permitted and are much lower than any competition offers today for a like product.

Boat owners, boat builders and engine dealers will be supplied the fullest details on request.

SCRIPPS MOTOR COMPANY

5819 Lincoln Avenue Detroit, Michigan, U. S. A.

"Every Moving Part Enclosed"

Radically Different —and Better

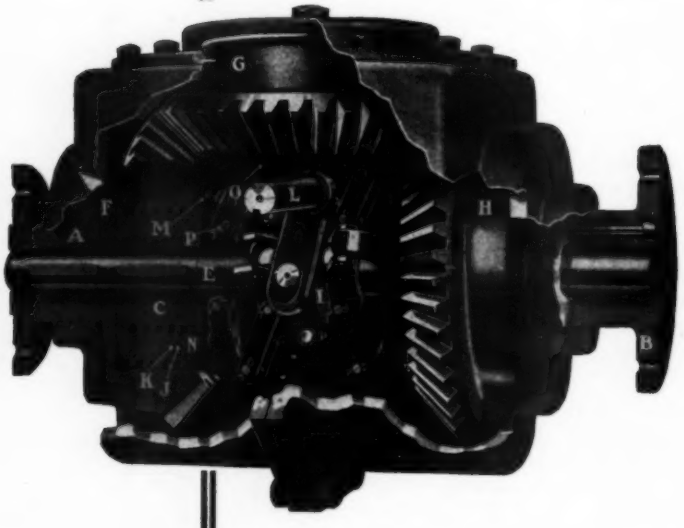
McKinnon Reverse Gear

THE McKinnon Gear is such a radical improvement in design and principle over the ordinary reverse gear that its construction is worth the special study of every boatman who has to buy or use a reverse.

Study the illustration below. Note the three big bevel gears, their large teeth and the broad contact surface of every tooth. Compare this strength and simplicity with the multiplicity of little spur gears in other reverse gears.

The ordinary reverse is the planetary type, a type widely used for automobile transmissions, fifteen to eighteen years ago, but now used in only one very low priced car. It was found that planetary gears would not stand hard service because they had so many small gears, pins, bearings and wearing surfaces. We predict that they will also be discarded for marine reverse gears within a few years.

The McKinnon Gear contains two large multiple disc clutches, one for forward drive and one for reverse. These clutches have far more friction surface for their size than any other type of clutch. They engage smoothly, hold firmly and can be intentionally slipped for considerable periods without heating up or harm to the clutch.



McKinnon Gears have been tested in the mechanical laboratory with the most improved scientific testing apparatus. They have been tested in real boats under unusually difficult service conditions. You'll find them without question the best gears you can buy. Let us prove it.

These sizes ready in quantities May 15th

No. 1 transmits 4 H.P. per 100 R.P.M. No. 2 transmits 8 H.P. per 100 R.P.M.

Two sizes ready for delivery

No. 3 transmits 13 H.P. per 100 R.P.M. No. 4 transmits 20 H.P. per 100 R.P.M.

Absolutely Guaranteed for One Year—Other sizes in Construction

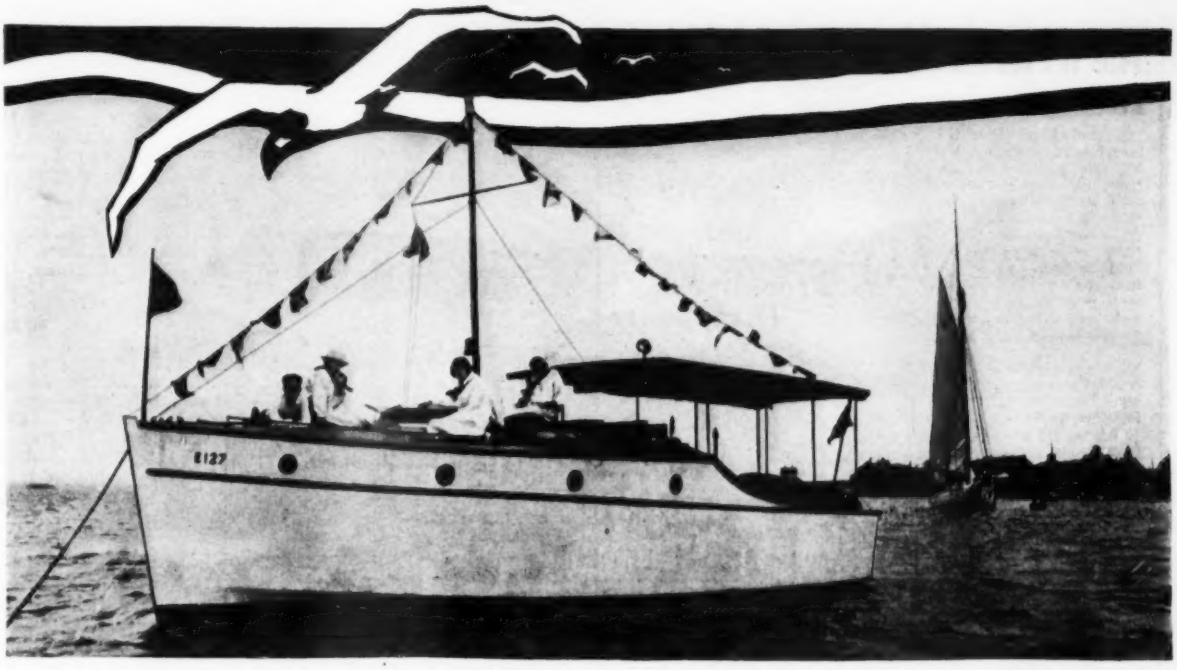
Write today for description and prices, giving details of your engine including R.P.M.

McKINNON IRON WORKS COMPANY

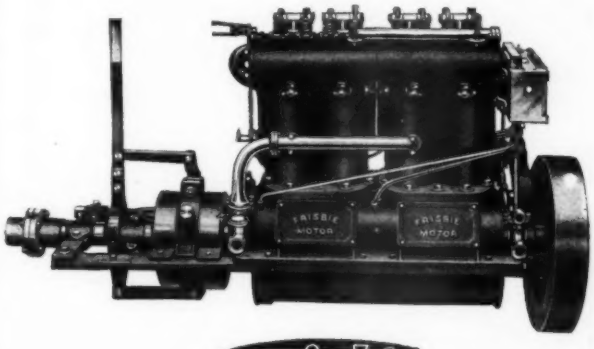
ESTABLISHED 1880

ASHTABULA OHIO

Advertising Index will be found on page 126



The Naomi, 31-ft. Cruiser, J. H. Jones, Wollaston, Mass., powered with a 30 H.P. 4-cyl. Frisbie Valve-in-Head Motor. "Our good old Frisbie never missed, in spite of waves that washed our decks," says Mr. Jones in telling of his 500-mile cruise to Bangor, Maine, and return.



Frisbie
VALVE-IN-HEAD
MOTOR

Wherever marine motors are known, the Frisbie Valve-in-Head Motor is noted for its power and persistent performance. Ten Models, 1 to 6 cylinders, 5 to 75 H.P. All four cycle.

Catalog and name of nearest dealer on request.

Frisbie Guarantee of Price Permanence

We are advising all Distributors, Naval Architects, Boat Builders and Users, that the present prices on Frisbie Motors themselves are guaranteed against decline for the balance of this year's requirements.

We are practically the only marine engine company which was willing to eliminate their profit and maintain prices, when it would have been easy to advance with the demand during the past three years, and we believe our customers appreciate the holding of our prices *then*, and will be glad to learn *now*, that Frisbie is one line they can purchase with confidence and without fear of a price slump.

We are now accepting orders for shipment throughout the year.

Frisbie Motor Company
7 College St. Middletown, Conn.

Frisbie an' I

The Waters Call To Summer Joys

The cool blue lake, the breezy bay, the hidden inlet, the swiftly gliding river, the creek gurgling amid its leafy banks invite you to share Mother Nature's summer delights — the fish — the "old fellows" that have been playing with you for summers past dare you to catch them.

Go Anywhere in a Disappearing Propeller Boat in perfect safety from submerged logs, rocks and sand bars.

Propeller Disappears

The instant the protecting skeg —the exclusive feature of this motor boat—touches any submerged obstacle it raises the propeller and propeller shaft into its housing, at the same time throttling the engine. The boat glides over as easily as the lightest skiff. The propeller and skeg act as a centerboard keeping boat on even keel making it possible to stand up to fish or shoot or to dive with absolute safety.

DISAPPEARING PROPELLER BOATS

Driven by 3 H.P. single cylinder engine equipped with Maxim Silencer and copper water jacket. 20-25 miles per gal. of gasoline. 9 to 9½ m.p.h. Simple one lever speed control —a child can operate it with ease.

Built in 3 models. Waterford $375; John Bull $425; Uncle Sam $475. Specifications: 16½ to 18½ ft. and 4½ ft. beam.

Before planning your summer outing read "Vacation Days", a beautifully illustrated story of the out-of-door season sent **free** together with a list of Disappearing Propeller Motor Boat owners. See a Disappearing Propeller Motor Boat demonstrated. A limited number of agencies open.

DISAPPEARING MOTOR BOAT COMPANIES

97 King St., W., Toronto, Can. 731 Main St., Buffalo, N. Y.

MOTOR BOATING's *Correspondence Course Still Going Strong*

(*Continued from page* 110)

Crothwaite, C. W. Culver, L. Chapman, J. W. Campbell, R. Dart, F. H. Delano, W. W. Dickson, E. Donkin, J. Dunbaugh, J. Donnelly, F. Dunnels, A. Ek, I. S. Ellsworth, A. J. Fenton, J. A. Filsner, R. Finigen, H. O. Finger, E. F. Folda, V. Francis, W. R. Folsom.

N. D. Gillespie, W. H. Goodman, W. J. Gorton, W. H. Gray, C. E. Grush, W. Gustofsen, G. D. Granville, G. F. Hacken, J. R. Haffren, J. A. Hain, Rev. A. M. Hainer, G. Hansen, W. B. Harris, E. W. Henrickson, G. Houlroyd, L. H. Howe, G. Hoyns, C. Holzcamp, R. Histand, J. A. Howland, E. D. Hamilton.

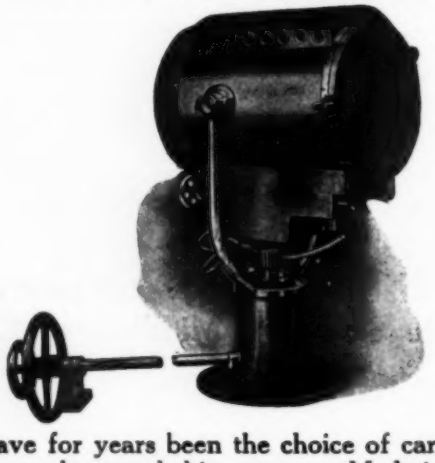
J. Jenks, M. R. Johnson, E. J. Jones, A. E. Jones, A. D. Jordon, Mrs. E. J. Kaiser, F. D. Kelle, J. Kellner, E. Kenyon, F. W. King, E. H. Kershaw, J. A. Kraven, L. B. Lang, G. R. Law, L. A. Le Van, G. H. Leland, J. B. Losee, J. F. Lowcock.

C. T. Magee, M. L. Mandel, J. C. Mann, R. H. Miller, J. H. Monorec, H. H. Morton, W. B. Moores, C. H. Mulvihill, Capt. J. McCulpin, D. C. McClean, P. F. McMahon, J. McHenry, J. L. McKenzie, F. E. Mitchell, E. Mattison, G. B. McCluskey, J. H. McClary, E. Mathews, F. L. Moore, J. A. Needhams, J. S. Newcomb, M. S. Noyes, F. J. O'Brien, E. J. O'Beirne, F. O'Beirne, W. R. Palmer, L. Pensmith, B. S. Peirson, R. S. Pollnick, H. H. Powell, R. W. Poland, A. D. Perth, G. A. Patrie, W. N. Pharr, P. J. Pollnick, H. Quick, J. Rawlinson, J. A. Rawson, J. Reicherter, R. B. Rives, W. W. Robson, A. G. Roche, M. J. Ross, M. B. Ross, L. P. Richardson, G. Schumakoff, Dr. J. F. Schefcik, H. P. Shay, W. E. Shannon, J. H. Shrieves, J. H. Sharpe, W. E. Sisson, S. E. Slocum, D. O. Smith, A. D. Smith, R. E. Smith, B. T. Smith, F. B. Smith, Fred B. Smith, H. R. Stiles, P. R. Stephanson, M. Stelle, H. A. Stahl, W. B. Staley, A. C. Swift, R. Schultz, Dr. R. I. Sexton, H. L. Stanley, S. Steinmetz, A. Sunny, T. Steiniger, E. Swayne, S. B. Smyth, H. H. Sellew, P. Schneider, J. L. Saegmuller, D. Taylor, W. H. Taylor, W. C. Temple, O. A. Thomas, S. H. Thomas, G. H. Thurston, E. E. Torchio.

H. E. Watkins, L. E. Wilson, C. E. Wilson, L. M. Ward, W. O. Yates, C. S. Young, M. A. Young, H. T. Sachgo.

If you fail to find your name in this list it may mean that you have not signed your name to your answer. We have received twenty-five unsigned papers.

CARLISLE & FINCH ELECTRIC SEARCHLIGHTS



have for years been the choice of careful motor boat and ship owners. Made in all diameters, from 7" to 60". Used on every size craft from motor boat and yacht to battleship and ocean liner.

The Carlisle & Finch catalog of searchlights will be mailed to any boat owner, builder and marine architect on request

THE CARLISLE & FINCH COMPANY

261 East Clifton Ave. Cincinnati, Ohio

SUBJECTS WHICH WILL BE COVERED IN VARIOUS LESSONS

Lesson No.

1. Rules of the Road, Rights of Way, Proper Whistle Signals, Duty When Underway.
2. Types and Classes of Motor Boats and other Power and Sailing Vessels, Lights for All Classes of Vessels.
3. Navigation and Government Lights, Lighthouses, Lightships, Range Lights and their Characteristics and Classification, Aids to Navigation.
4. Buoys of Various Types. Colors and Numbers, Uses and Meaning. Can, Nun, Spar, Bell, Whistling, Lighted and Combination Buoys. Starboard and Porthand Buoys, Channel, Obstruction, Anchorage and Turning Buoys.
5. Equipment Required by Law for Various Types of Boats, International, Inland, Pilot and Motor Boat Rules and Regulations, Government Publications, the Light and Buoy Lists, Tide Tables, Coast Pilots, Notice to Mariners.
6. The Compass.
7. Variation, Deviation, Magnetic and True Courses, Compass Errors and Their Application, Various Methods of Determining Compass Errors, Leeway.
8. The Chart, Various Kinds of Charts, Where to Obtain Them, Their Use, Various Markings on Charts, etc.
9. Nautical Instruments, the Log and Lead Line, Sounding Machines, Pelorus, Azimuth, Protractor, Parallel Rules, etc.
10. Piloting and Chart Work, Laying Courses, Determining Position by Various Methods, Allowing for Tides and Current Danger Angles.
11. Small Motor Boat Handling, Steering, Engine Room Signals, Action of Propeller, Action of Winds and Current, Shallow Water Indications, Tide Rips, Head, Beam and Following Sea, Picking up Mooring, Making Landings at a Float and Wharf, the Dinghy, Landing in a Surf, Navigation in Fog, Crowded Waters, Anchoring, Docking, Practical Aids in Boat Handling.
12. Cruising, Proper Equipment to Carry, Keeping a Log, Sun and Clock Time, Duties of Various Members of Crew.
13. Flags and Colors, Yachting Etiquette, Signalling.

Advertising Index will be found on page 126

50 Ft. of Cruising Comfort in a 36 Ft. Boat

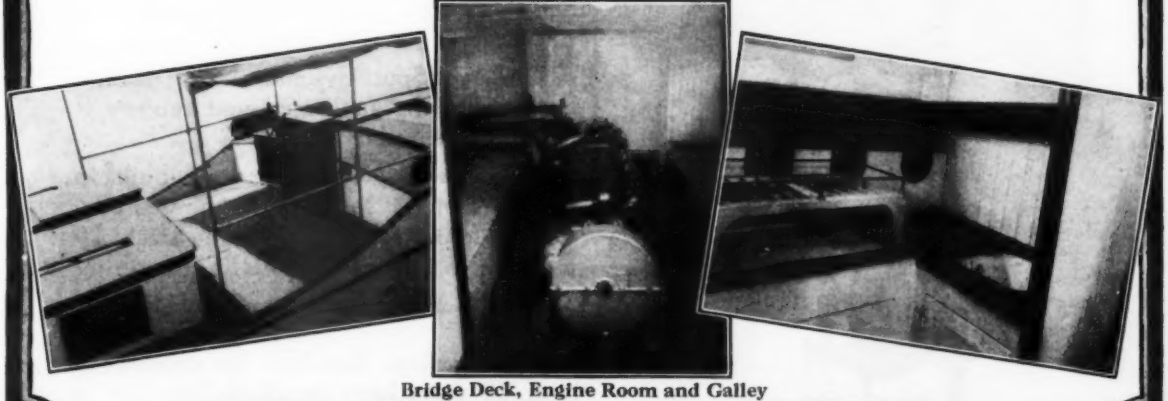
THE structural perfection of the Burger 36 Ft. Cruiser accounts, in a measure, for its marked seaworthiness and cruisability. But more than this—it represents the results of skillful and authoritative designing ability which is so pleasingly revealed in comforts and conveniences identified only with larger and more expensive boats.

And yet with its cozy interior and roomy cabins, the charming symmetry of the hull and balanced arrangement of the deck cannot fail to create well-deserved admiration and an enthusiastic desire for ownership.

A bridge deck large enough for all; fore and aft cabins for lounging or sleeping quarters or dining-room; a well-equipped galley; an engine room with two bunks and workbench; two toilets; every detail correct—do you wonder now why Burger owners are proud of their 50 ft. cruisers only 36 ft. long?

Write for our illustrated book containing photographs and specifications

BURGER BOAT COMPANY, MANITOWOC, WIS.



Bridge Deck, Engine Room and Galley

BURGER

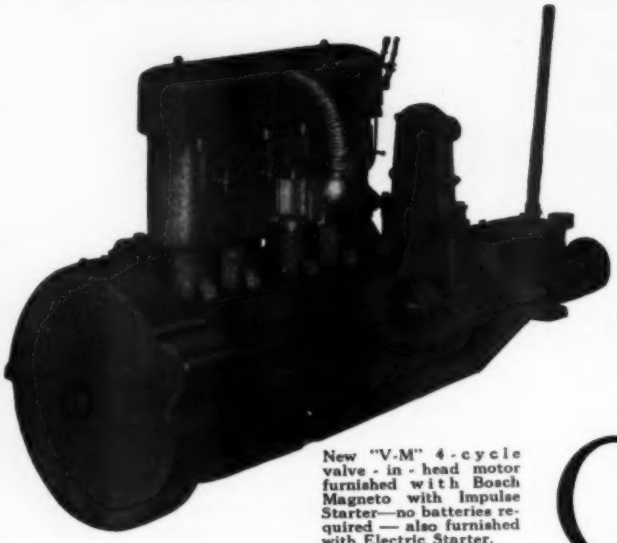
BOATS BEAUTIFUL

Immediate deliveries from stock. Price without war tax, $4950.00 delivered at Manitowoc, Wis.

We also build a 26 ft. Runabout, designed by John L. Hacker. Speed 25 miles. Complete details on request.

Gray Marine Motors for 1921

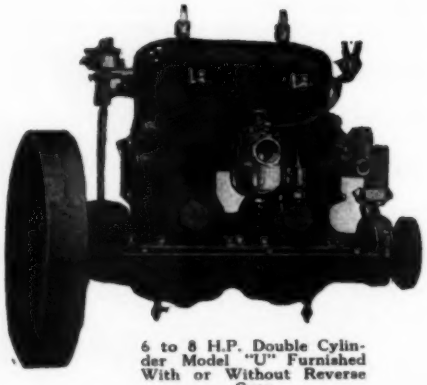
"the engine with the Big crank shaft"



New "V-M" 4-cycle valve-in-head motor furnished with Bosch Magneto with Impulse Starter—no batteries required — also furnished with Electric Starter.

Your DEPENDABLE Power Plant for Work Boat, Cruiser or Runabout.

The New York State Barge Canal tried out 4 model "V-M" Gray Motors in 1919 with other leading makes. Last year they put in commission 35 more Grays.



6 to 8 H.P. Double Cylinder Model "U" Furnished With or Without Reverse Gear

OVERHEAD valve marine-motors are acknowledged to be of greater efficiency and power than other types and in the Gray the ultimate of valve-in-head marine motor perfection has been attained.

The Gray is designed to operate on either gasoline or kerosene, it cannot backfire, it burns the fuel keenly with practically no carbon, soot, smoke or odor and lubrication troubles are unheard of in the Gray.

Our Hot-Spot Cylinder Head gasifies thoroughly the fuel used and renders it completely combustible.

Gray Two-Cycle Motors are built in models from 3 to 8 h. p. Gray Four-Cycle Motors are built in three sizes, 10 to 50 h. p. Write for FREE literature.

Selected for Canoes, Row Boats and Small Launches. 3-8 H.P. 2-cycle Gray Motor. Standard the World Over.

Leading Boat Builders for upwards of 15 years have specified Gray Engines as standard equipment for their boats.

GRAY MOTOR COMPANY 2106 MACK AVE., **Detroit, Mich.**

Advertising Index will be found on page 126

BOSCH

POWER—
Constant, Reliable, Economical

Bosch High Tension Magneto Ignition has built more confidence in power boat engines than any other single element. The absolute dependability of the life-giving stream of fire of Bosch Magneto Ignition has proved itself to gasoline engine owners in every port. Bosch Magneto Ignition is conveniently available for your motor boat, automobile, truck, tractor or stationary engine at the nearest service station.

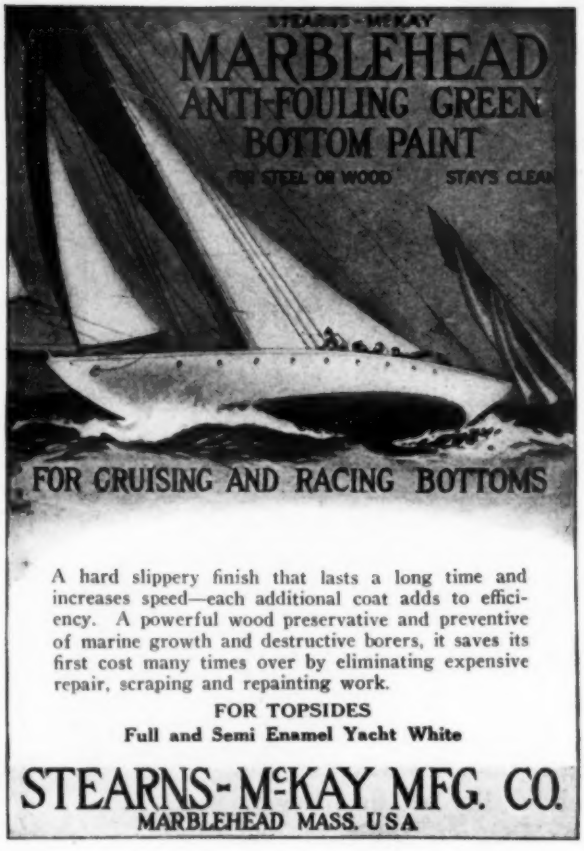
Be Satisfied ***Specify Bosch***

Four Hundred Service Stations in
Four Hundred Centers

AMERICAN
BOSCH MAGNETO CORPORATION

Main Office and Works: Springfield, Mass.

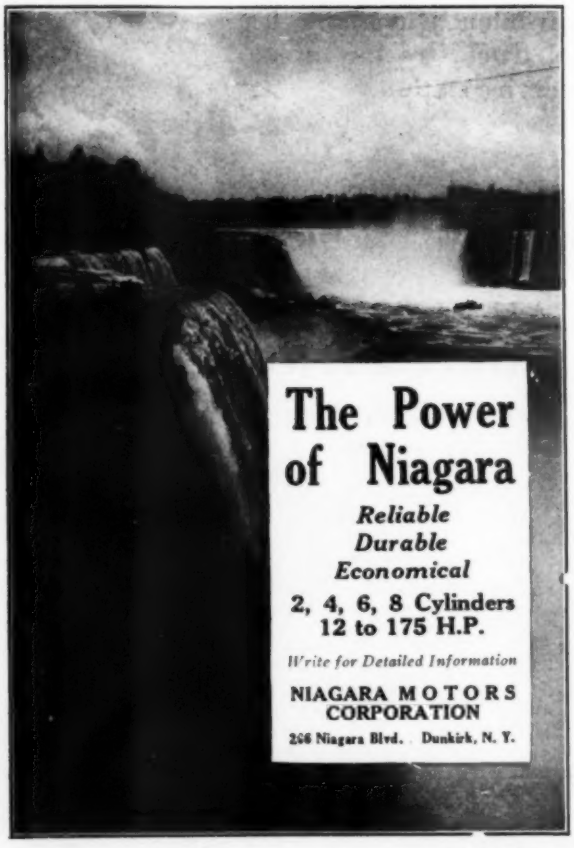
Branches: New York, Chicago, Detroit, San Francisco



A hard slippery finish that lasts a long time and increases speed—each additional coat adds to efficiency. A powerful wood preservative and preventive of marine growth and destructive borers, it saves its first cost many times over by eliminating expensive repair, scraping and repainting work.

FOR TOPSIDES
Full and Semi Enamel Yacht White

STEARNS-McKAY MFG. CO.
MARBLEHEAD MASS. U.S.A.



Equipment Required by Law and Government Publications

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carrying passengers for hire but not engaged in fishing as a regular business are subject to inspection whether under or over 65 feet in length.

Motor boats of five net tons or over engaged in trade must be documented, that is to say, licensed by the Collector of Customs. Vessels under five net tons are not documented in any case. The license of the vessel obtained from the Collector of Customs called a document is additional to and should not be confused with the license required for the operator of a motor boat. The name and home port must be placed on the stern and the name on each bow of all documented vessels. In addition it is recommended that the name be conspicuously displayed on undocumented motor boats.

In accordance with an act of Congress which went into effect on December 7, 1918, every undocumented motor boat, either pleasure or commercial, operated in whole or in part by machinery on the navigable waters of the United States was required to be numbered. The only exception being public vessels and boats under 16 feet in length when temporarily equipped with detachable motors. A boat greater than 16 feet equipped with a portable motor must be numbered as well as the boat under sixteen feet equipped with a built-in engine. Documented boats, including registered, licensed and enrolled boats of over 65 feet in length, or over sixteen tons gross, are not required to be numbered. Applications should be made to the Collector of Customs for a printed numbering form and when this is returned a number will be issued. The number assigned must be carried on each bow of the boat in a contrasting color so as to be distinctly visible and legible.

All motor boats not exclusively engaged in commercial pursuits pay a special excise tax, depending upon their size. Yachts and motor boats of over five net tons, but not over fifty feet in length, pay a tax of $1 per foot of length. If over five net tons and over fifty feet, but not over 100 feet in length, the tax is $2 per foot of length. Over five net tons and more than 100 feet in length, $4 per foot of length. Motor boats with fixed engine, not over five net tons, a flat rate of $10.

Government Publications

The successful navigator of small boats avails himself of all the information which kindly government puts at his disposal. For the purposes of the amateur sailor there are many useful publications which increase the safety and confidence of the operator in his boat. The costs of these various publications is trifling and it is advisable for every boat to be equipped with a set. Naturally the first essential is a chart of the waters which are being traversed. These will be more fully treated in subsequent lessons. Sailing directions for all harbors and inlets, rivers, etc., along the entire coasts of the United States can be secured in the various volumes of the Coast Pilot. This very useful book gives detailed information concerning the proper method of entering any harbor at all and the stranger can with full confidence pilot his boat wherever he chooses to go. The information contained in the Coast Pilots has been compiled with the particular object in view of furnishing needed data for the small boat pilot. Sailing directions are given for entering harbors in which it is possible to carry only a few feet of draft. These places in particular furnish excellent shelter in the event of storms. Localities where fuel, ice and other supplies may be obtained are all described and mentioned. The buoy system for various districts is explained and points where pilots and tows may be obtained are mentioned and dry docks and repair yards are listed. Data about fogs and its occurrence and points where storm warnings are displayed, as well as general weather rules, are all tabulated.

An annual publication of much value is the light list for the Atlantic and Gulf coasts which includes all lighted aids to navigation maintained by or under the jurisdiction of the United States Lighthouse Service. This light list includes all lighthouses, lightvessels, lighted beacons, lighted buoys and fog signals but not unlighted buoys or beacons. As a means of increasing the convenience when using the book the principal seacoast lights are printed in bold type and the less important lights in lighter type. The name of each light is given as well as its character and period of light. The fact of its being fixed, flashing, group flashing, occulting, alternating, etc., is all very carefully explained. Our illustration mentions Execution Rocks in Long Island Sound as being a flashing white light, every ten seconds, with a red sector. It is on the rocks in latitude 40—52—41 N. and longitude 73—44—17 W. This information can be used as a point of departure in sailing by dead reckoning. It further states that the height of the light is 55 feet and can be seen for 13 miles. Candlepower of the white light is 24,000 while the red light has a candlepower of 7,200. In a similar way all other lights and lighted aids along the coast are described in detail.

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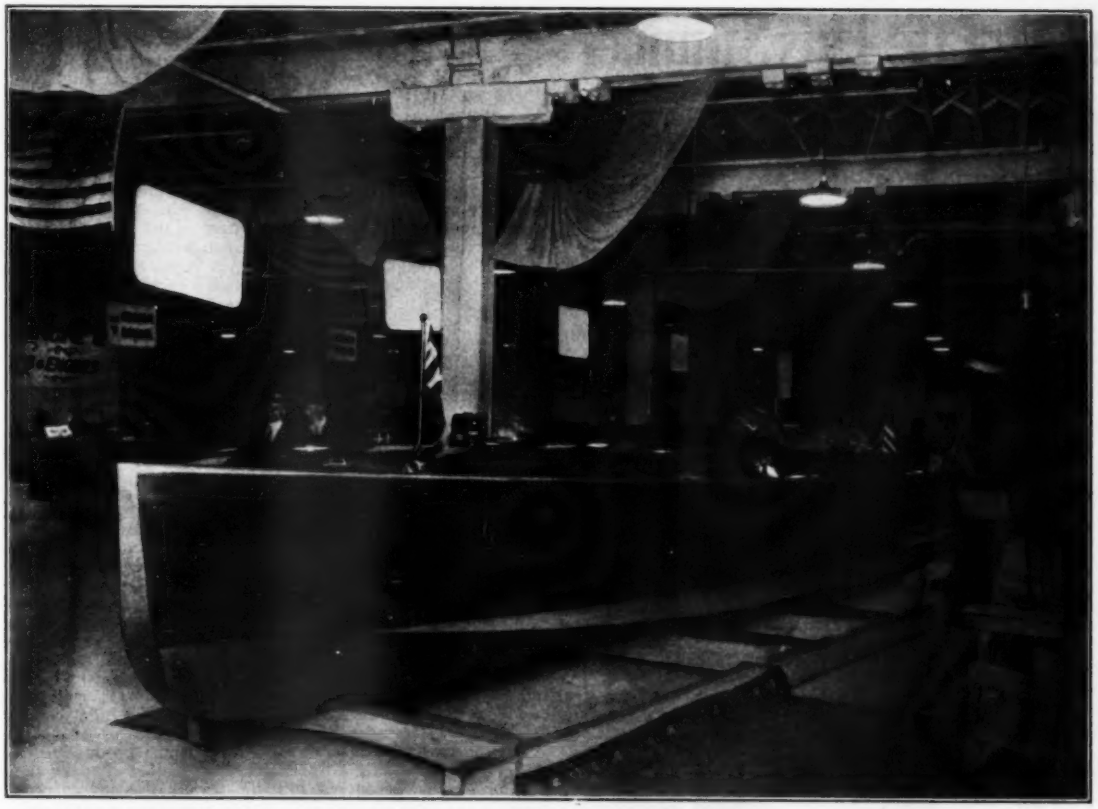

DISPLAY OF CENTRAL MARINE SERVICE CORP. AT DETROIT MOTOR BOAT SHOW

STANDARD GEARS

USED IN SMITH 26ft. RUNABOUT AS STANDARD EQUIPMENT

AFTER repeated and exhaustive tests the No. 4 Standard reverse gear was adopted for the standardized production Smith 26ft. 100hp. Express Runabouts now being turned out at the Algonac Plant.

Write to-day for catalog

Standard Gear Co.
5928 Commonwealth Ave.
DETROIT, MICH.

Enjoy Life This Summer

Cruise the Lakes and Rivers in Your

"TUNNEL-KING"

Protected Propeller Motor Boat

All summer long, you and your family and friends can have the most enjoyable picnic cruises when you own a "Tunnel-King". For the "Tunnel-King" takes you swiftly and safely up any creek or bay where there's water enough to float a log. The propeller revolves in a tunnel at the stern, and is still further protected by two projecting skegs which deflect all floating obstructions. And you can pull your "Tunnel-King" up on the beach just like a row boat. The engine in this tight little craft is a wonder. It is the famous "Kingfisher" a one-cylinder beauty—a genuine one-man control that a child can operate. The "Tunnel-King" is 17 feet long, 22 inches deep, 4 ft. 4 in. beam. It comfortably accommodates 6 people—more at a pinch,—and is the finest-looking, most seaworthy and most easily handled little cruiser you ever laid eyes on.

Write for Free Booklet NOW

THE A. R. WILLIAMS MACHINERY CO., Limited

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If it's Machinery—write "Williams"

TIEBOUT FOR HARDWARE

—— anything, from a brass screw to a rudder. It's all a part of our complete line. No order too small—no order too large—we carry a complete line in stock at all times.

Write for one of our complete illustrated catalogues. In it is listed everything you will possibly need. If we haven't what you want, we can make it for you.

Tiebout Service is immediate service. What do you need?

W. & J. TIEBOUT

118 Chambers St. New York City

Equipment Required by Law and Government Publications

(*Continued from page* 118)

The Buoy List, a similar publication to the Light List but intended more particularly for local information, is published for shorter stretches of the coast, generally by lighthouse districts. The information duplicates that contained in the Light List as far as concerns the lighted aids and in addition furnishes complete information about the location and characteristics of all unlighted aids and other aids such as buoys of all classes. The various types of buoys which are used in different localities are all described in detail. Such information about the visibility of lights, their height above the sea, is repeated from the Light List. These publications are intended to supplement the information published on the large scale government charts. These show clearly the location of each buoy as well as giving all necessary information concerning it, and since the charts are corrected up to the date of issue, the information is more recent than that contained in the list which is only published each year.

Another publication which is of great value to the small boat operator is the Tide Tables, published annually by the Department of Commerce. These appear as separate volumes for the Atlantic and Pacific Coasts and a general table covering both. The information contained gives the predicted time of each high and low tide for every day in the year at each of twenty-four standard ports of reference (in the Atlantic Coast Tables), in addition there are referred to each of these standard ports numerous secondary places at which the tides can be quickly determined by the addition or subtraction of the correction which is applied to the time at the standard port. In addition to the time of high and low tide the tables give the estimated height of water above and below the datam line. All tides do not have the same range and the low tides generally fall slightly below the mean while the high tides rise well above the mean. A careful distinction should be drawn between the vertical rise and fall of the tide which is marked by a stationary period at high or low water, and the flow of the current. The tidal current is the horizontal transfer of the water from one place to another and is the result of differences in level which produce the flood and ebb currents. It does not necessarily follow that the time of high or low water agrees with the period of slack current. In many places the current will outrun the vertical movement of the tide and continue to flow for several hours after the predicted time of the tide. It often happens when the water is at stand, the tidal current is at its maximum and when the current is slack the rise or fall is going on with the greatest rapidity.

The predictions of tides for the tide tables are made by a complex machine which was designed for this purpose by the Coast and Geodetic Survey. There are numerous constants which are set for predicting the tides at any port. These, with certain astronomical data for the particular year, are entered into the machine, which takes care of thirty-seven different elements. After the machine is adjusted, the turning of the crank moves a system of pointers over dials from which the height of the tide and the successive high and low tide may be read for each day. These figures are tabulated and form the tide tables. It requires two or three hours to set the machine with the constants for any station and from seven to ten hours more to operate and tabulate the tides for an entire year.

In order to keep the charts and other publications up to date the government publishes each week a pamphlet which enables the sailor to correct his information continuously. It is an expensive proceeding to correct the plates from which the charts are printed. This is done at frequent intervals but in order to keep charts which have been purchased absolutely correct, it is necessary to add such corrections and changes as occur from time to time to the information contained on the charts. The Notices to Mariners are published and distributed free for this particular purpose. The information is published geographically and details all changes which have been made during the previous week. The booklet is printed on one side of the paper and clippings from it can be pasted in to their proper place in the publication affected. The notes will mention, for example, that in the State of Rhode Island—Mount Hope Bay—the Common Fence Point Shoal Gas Buoy No. 2, characteristic of light is changed on a certain date. The publications on which this correction should be made are listed as Coast and Geodetic Survey Charts Nos. 353 and 113. The Light List, item 314, the Buoy List for third district, page 2, and the Coast Pilot, section B, 1918, page 104. Any one possessing any or all of these publications should correct them as indicated which will insure correct data at all times.

The catalog of Charts, Coast Pilots and Tide Tables is a general index of all the publications issued by the Coast and Geodetic Survey of the Department of Commerce. It contains an official list of all charts, light lists and buoy lists published. An index of the various agencies where these publications can be purchased and such explanations concerning the information or charts and in the books as is necessary. By means of this catalog any particular chart can be quickly located and its price determined.

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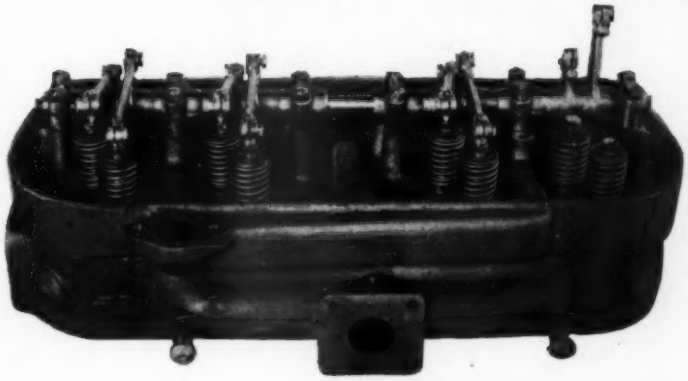
Knox

"Steady Service"



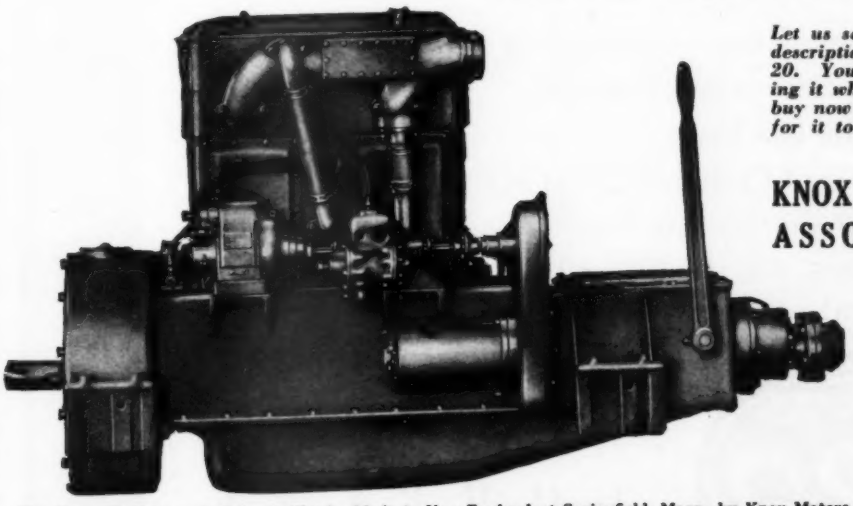
The cylinder head assembly of "Knox 20" carries the entire valve mechanism. Easily removed for grinding

Advanced Engineering

Throughout the design and construction of the new Knox 20 you'll find evidences of the advanced engineering that makes this up-to-the-minute engine so superior to ordinary marine motors of its size.

For example, study the cylinder head assembly shown above. In a few minutes you can have it off and the valves ready for grinding. Liberal water jackets surround each valve so they require grinding less often than a valve which isn't properly cooled. Intake and exhaust passages are cast in this cylinder head, warming the incoming gas and cooling the exhaust.

This is the ideal overhead valve construction. You'll also find in this motor the ideal lubrication system and the ideal everything else that goes to make up a truly superior motor.



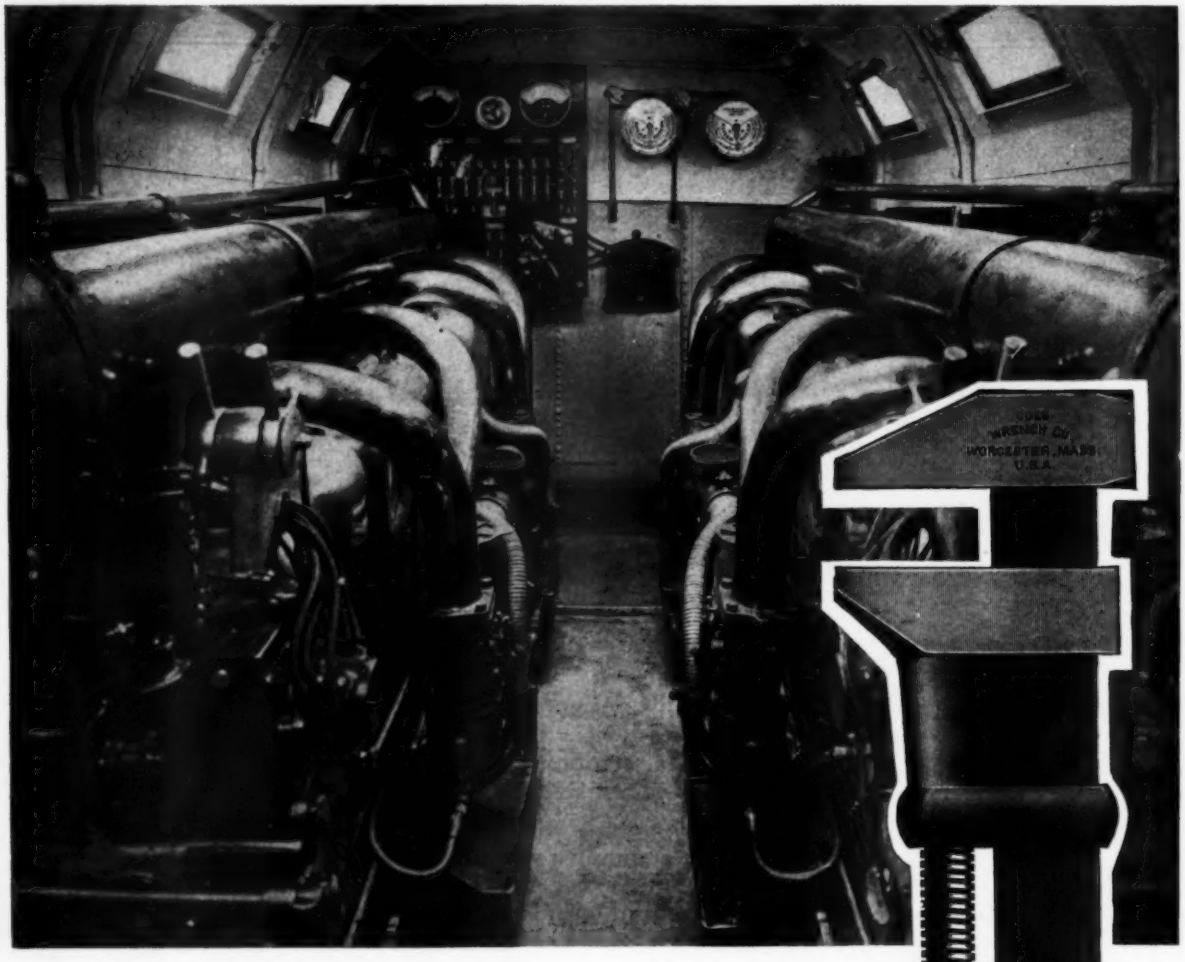
Let us send you a full description of the Knox 20. You'll enjoy reading it whether ready to buy now or not. Write for it today.

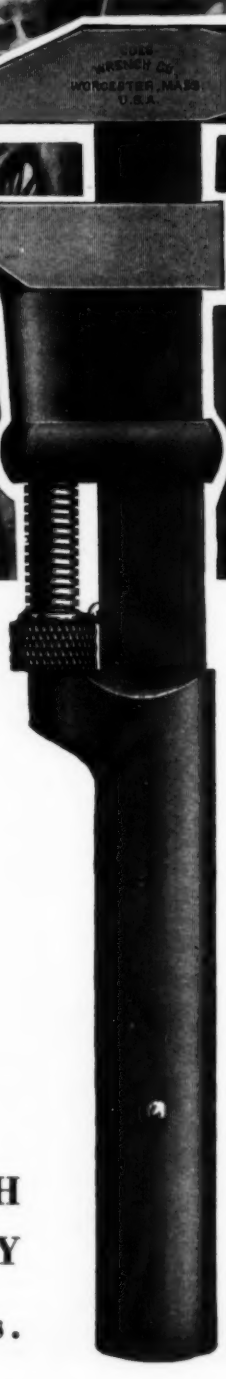
KNOX MOTORS ASSOCIATES

Springfield, Mass.

The Knox 20, 3½" x 5" Valve-in-Head. Made in New England at Springfield, Mass., by Knox Motors Company, also manufacturers of Truck, Tractor, Passenger Car Engines and industrial power sets

Motor Boating





Power, Strength, Coes Wrenches Quality, Ability and Satisfaction

You choose your power-plant after great deliberation and much thought.

It Must be the Best.

Then a set of COES WRENCHES and you have all that money can buy.

Eight sizes, all steel, from 4″ to 21″ and made for real work. Ask your dealer.

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COES WRENCH COMPANY

Worcester, Mass.

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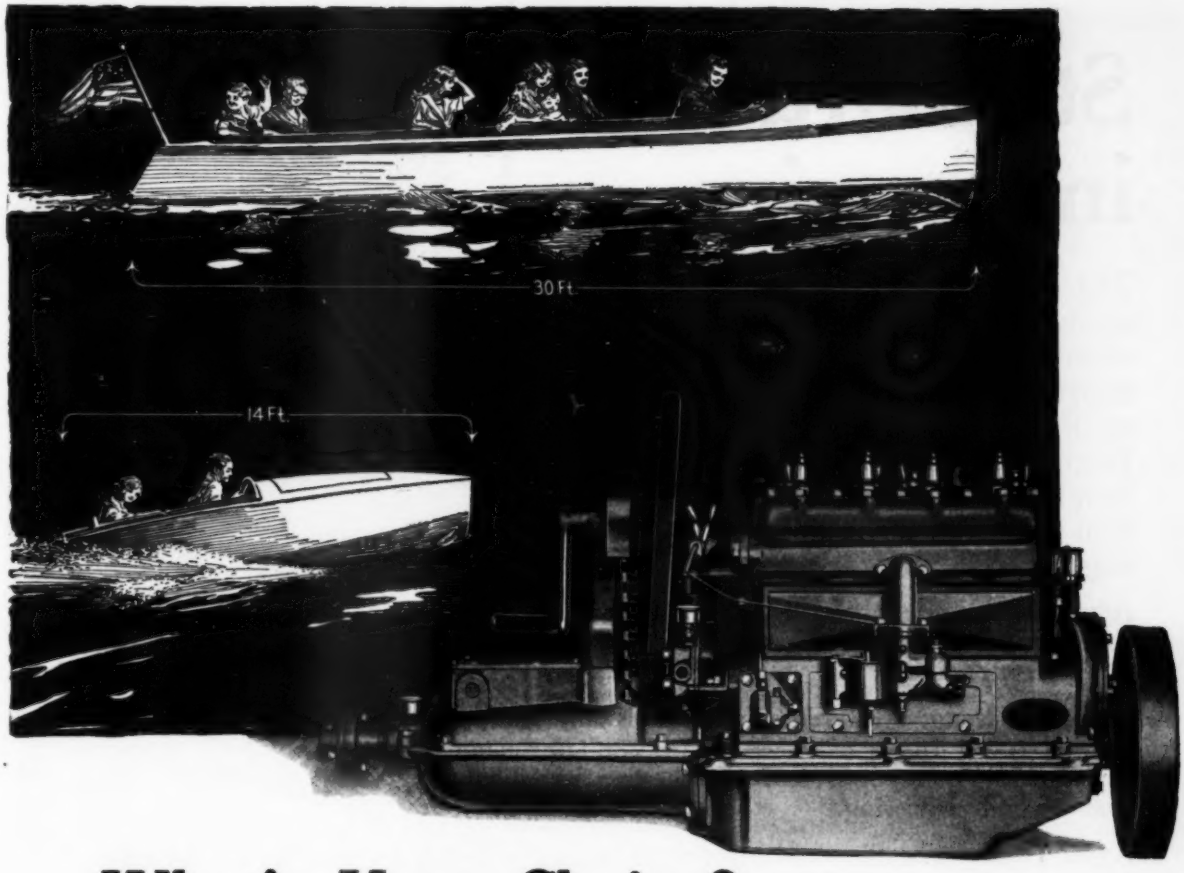


What's *Your* Choice?

WHEN you think of any size or type of motorboat—from the speedy runabout to the big family launch—think of the UNIVERSAL ENGINE in connection with it.

For then you'll have a boat to be *proud* of.

The UNIVERSAL gives you a "purr" of power—so steady, so smooth, so quiet, that all your ideas of motorboating are lifted into a new realm of enjoyment.

It gives an 18 mile speed or better to the small autoboat. It provides a 10 to 15 mile pace for larger boats, according to length and type. It throttles down to a pace for trolling.

And whatever size or type of boat that you use it for, the UNIVERSAL gives a *dependability* in operation that has made its reputation circle the globe. From Oshkosh to Tokio, this one size, one standard 9-12 h.p. four cylinder marine engine has earned a record for reliability that has few equals.

The UNIVERSAL is adapted to 80% of all sizes and types of motorboats—auto types, speed boats, launches, dories, fishing boats, etc.—from 14 to 30 feet in length. It is provided with reverse gear or electric self-starter where desired.

You'll never be satisfied with an ordinary engine when you learn what the ownership of a UNIVERSAL means. Its cost is surprisingly reasonable. Step up into the Universal class this season—it'll be the best step you ever took for sheer down-right pleasure. Get the Universal Catalog today and get the facts.

Universal

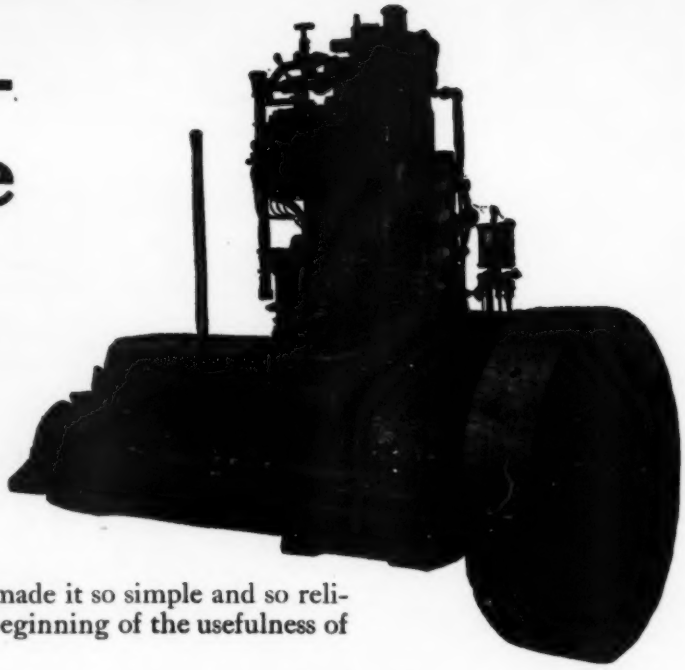
4-Cyl.
9-12 h.p.
MARINE MOTOR

UNIVERSAL MOTOR CO. Oshkosh, Wis.

Not connected with any other firm using the name "Universal"

Manufacturers, also, of the Universal 4 k.w. and 2 k.w. Electric Plants for lighting boats, summer camps and homes, farms, etc. Send for catalog.

Standard—in any size



The operation of the so-called semi-Deisel type of heavy oil engine is familiar to most marine men; only the owner of a Dodge Heavy Oil Engine, Marine type, knows how far superior is its operation to that of the ordinary engine.

Advanced marine engineering has made it so simple and so reliable that its advent marks the real beginning of the usefulness of this type of engine.

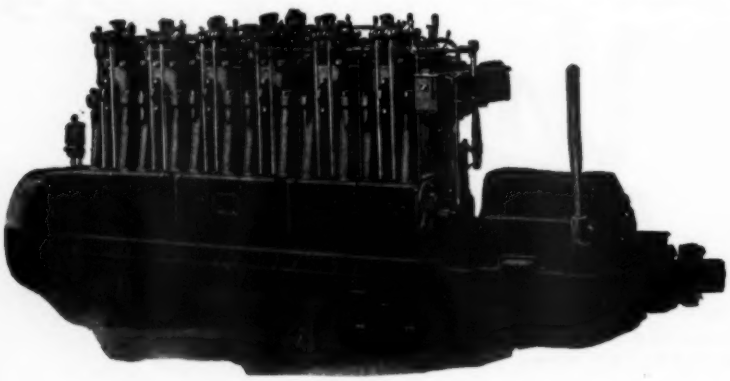
One of its strongest features is that there is only one *type* of Dodge Heavy Oil Engine, Marine type. In its five sizes there is no mechanical difference. Each cylinder develops 12½ horsepower, and with the five sizes there are no wide variations to force over- or underpowering.

Anyone that can handle—and anyone can—a single cylinder Dodge Heavy Oil Engine, Marine type, is master of the six cylinder even before he buys it.

Below is a table that will aid you in selecting the right Dodge engine for your boat.

Table of Specifications

No. of Cylinders	H. P.	Bore	Stroke	R. P. M.	Crank Shaft Bearings			Pin Crank		Marine		Diameter Exhaust Pipe	Distance from Center of Crank to Lowest Part of Engine—Exclusive of Flywheel	Stationary Fly Wheel Diameter	Over-All Dimensions Length			Marine Starting Air Tanks Supplied	Starting Air Tanks Supplied Twin Set	Stationary Starting Air Tanks Supplied
					Diameter	Length End	Length Center	Diameter	Length	Fly Wheel Diameter	Diameter Propeller Shaft Limits				Marine Including Gears and Coupling	Stationary Including Outbound Bearing	Height from C. L. Crank Shaft			
1	12½	6¾"	9"	425	3½"	6"		3½"	3¾"	32"	1½" - 1¾"	2½"	8⅝"	42"	75"	53"	46"	2	3	1
2	25	6¾"	9"	425	3½"	6"	5"	3½"	3¾"	28"	1⅞" - 2⅛"	3"	8⅝"	42"	88"	67"	46"	2	3	1
3	37½	6¾"	9"	425	3½"	6"	5"	3½"	3¾"	28"	2" - 2¼"	3"	8⅝"	42"	104"	85"	46"	2	3	1
4	50	6¾"	9"	425	3½"	6"	5"	3½"	3¾"	28"	2⅛" - 2½"	3½"	8⅝"	42"	120"	99"	46"	3	4	2
6	75	6¾"	9"	425	3½"	6"	5"	3½"	3¾"	28"	2½" x 3 "	4"	9⅛"	42"	147"	129"	46"	3	4	2



We will respond immediately to inquiries from accredited dealers desirous of handling Dodge Heavy Oil Engines, Marine Type, in their localities.

Dodge Sales and Engineering Co.
Mishawaka, Indiana, U. S. A.

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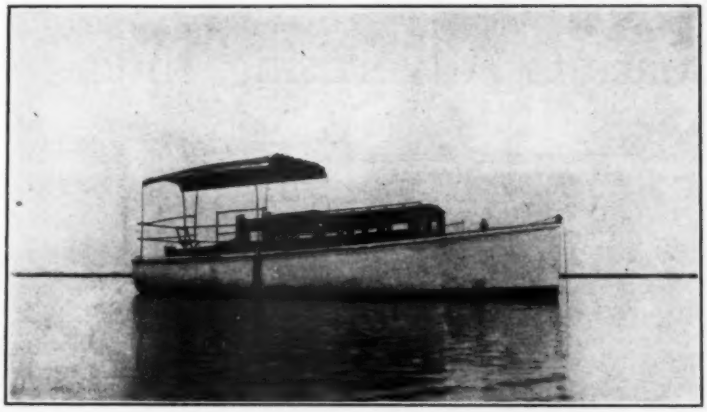


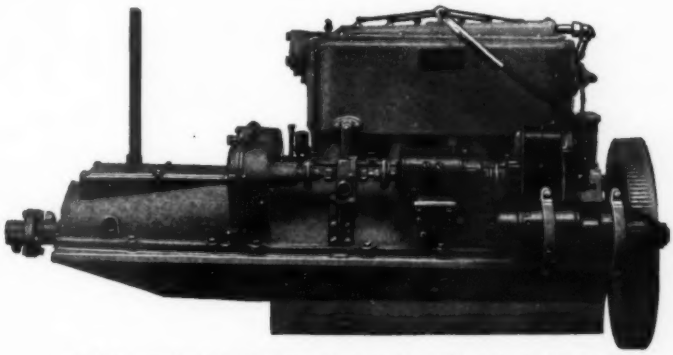
"INCA" 30 x 8½, is powered with a Fay & Bowen engine. She is owned by Mr. A. Eden of 504 Jefferson Ave., Brooklyn, N. Y.

HE WOULD BUY ANOTHER!

Writing us on March 24th, 1921, Mr. Eden says:

"The Fay & Bowen Motor which I had installed last May has been in use throughout the last summer and during that time I had no occasion to find any fault with its performance. I am convinced that it is a splendid machine and would buy another F. & B. if I needed an engine.

"You are perfectly welcome to refer to me at any time."



Fay & Bowen Model LN43 four-cylinder 4¾ x 5½ with electric starter

FAY & BOWEN ENGINES REPRESENT A SUCCESSFUL EXPERIENCE OF MORE THAN TWENTY YEARS

Fay & Bowen Engine Company

104 Lake Street GENEVA, N. Y. U. S. A.

NEW YORK: 44 Third Ave., at 10th St., Sutter Bros., Representatives.
PHILADELPHIA: 116 Walnut St., Marine Equipment & Supply Co., Representatives.
BOSTON: 84 Atlantic Ave., Gray-Aldrich Co., Representatives.

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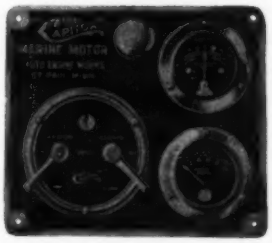

Dash instrument and switch plate controlling ignition, lights, ammeter, oil gauge and dash lights

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Delco ignition, Atwater-Kent two-unit starting, lighting and generating system, Willard storage battery, Stromberg or Schebler carburetor, instrument plate shown above and all other necessary equipments are included.

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High Speed Model	60-65 H. P. at 2000 R. P. M.
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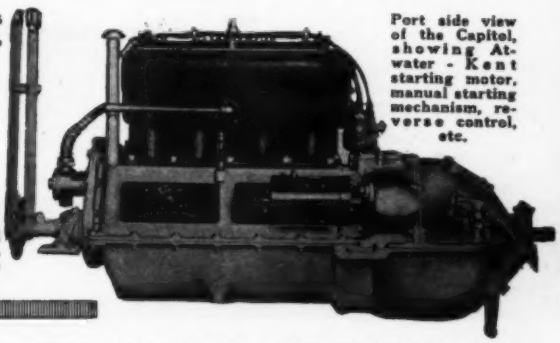
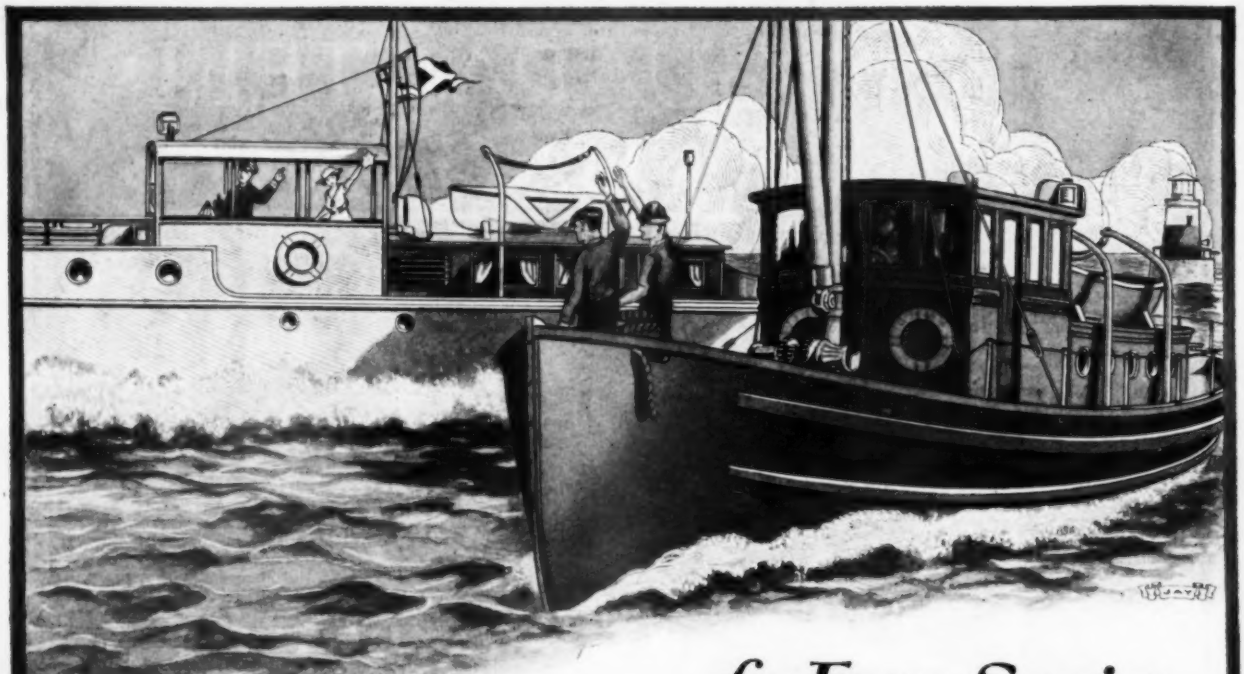


Port side view of the Capitol, showing Atwater-Kent starting motor, manual starting mechanism, reverse control, etc.



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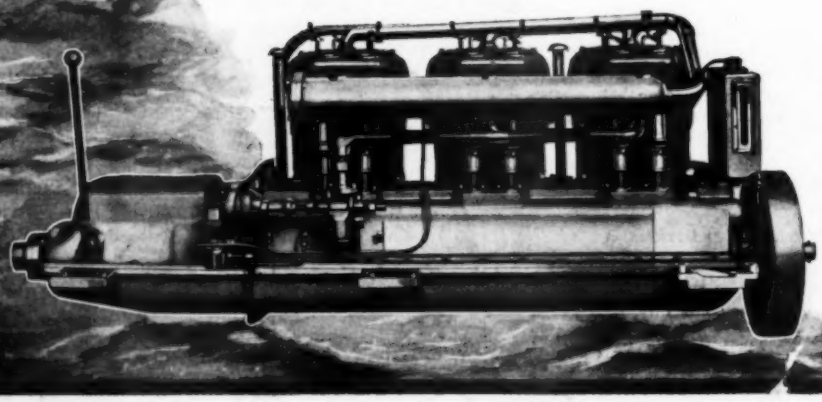

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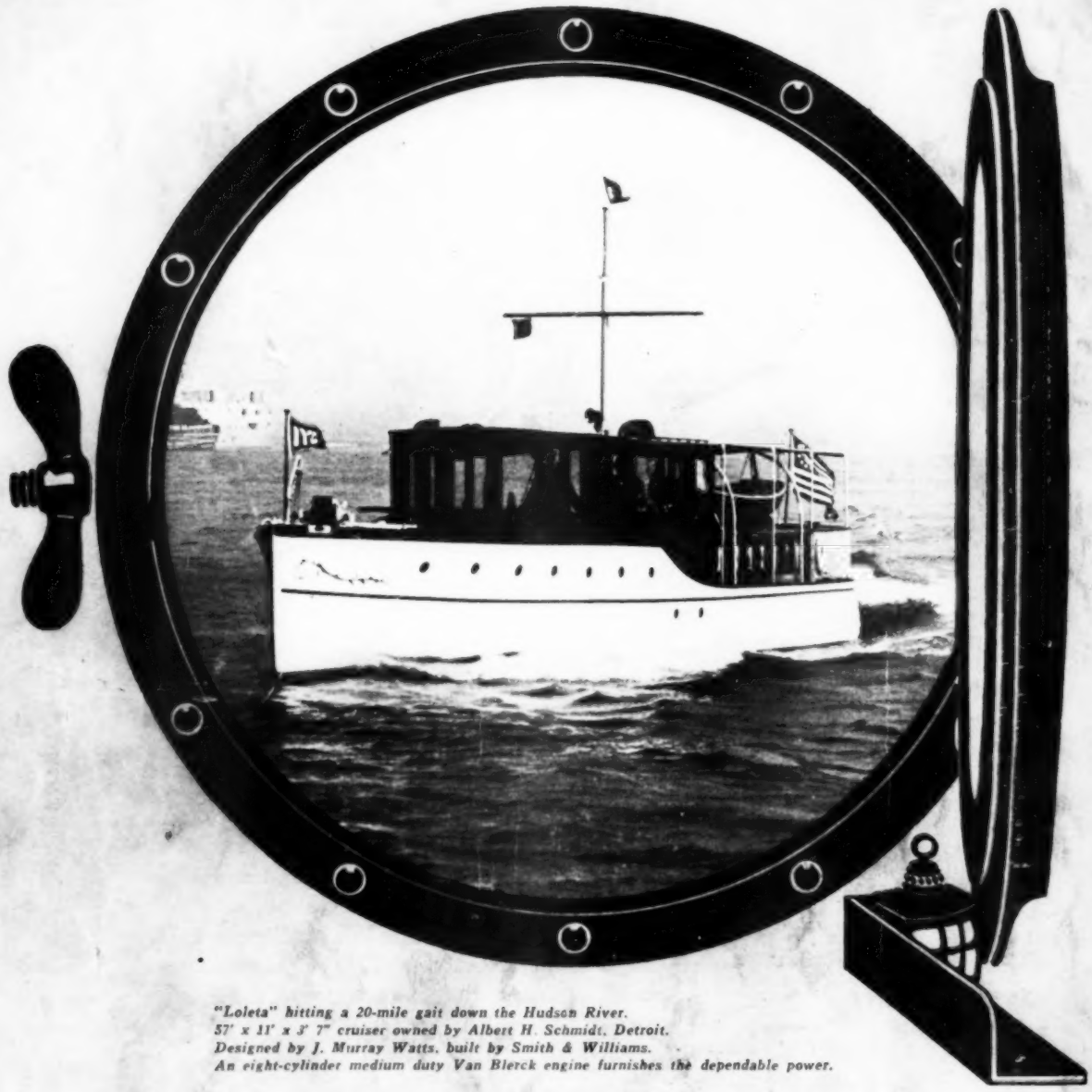

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